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Vol. 15

JUNE 1, 1918

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CATALOGUE

COURSES NOS. 1 TO 50 APPLY ONLY
TO SHORT COURSES DESCRIBED ON
PAGES 133 AND FOLLOWING



1918

1919

ISSUED MONTHLY BY THE
MARYLAND STATE COLLEGE OF AGRICULTURE

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THE MARYLAND STATE COLLEGE OF AGRICULTURE

CATALOGUE

1918—1919

Containing general information
concerning the College, Announce-
ments for the Scholastic Year 1918-
1919, and Records of 1917-1918.

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CALENDAR

FIRST TERM.

Monday, September 30, and Tuesday, October 1.—Registration and Organization.
Wednesday, October 2, 1 P. M.—College Work Begins.
Thursday, November 30.—Thanksgiving Recess.
Friday, December 20, 12 M.—First Term Ends.
Friday, December 20, 12 M., to Monday, January 6, 8 A. M.—Christmas Recess.

SECOND TERM.

Monday, January 6, 8 A. M.—Second Term Begins.
Monday, January 6.—Special Winter Courses Begin.
Saturday, March 15.—Second Term and Special Winter Courses End.

THIRD TERM.

Monday, March 17.—Third Term Begins.
Friday, April 18.—Good Friday Recess.
Thursday, May 15.—Submitting of Theses.
Sunday, May 25.—Baccalaureate Sermon.
Friday, May 30.—Founders' and Farmers' Day; Graduation Day.

1918

| JULY | | | | | | |
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| AUGUST | | | | | | |
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| SEPTEMBER | | | | | | |
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1919

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| JUNE | | | | | | |
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Assistant Chemist.

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MESSRS. CRISP, OLDENBURG, STODDARD, PATTERSON, PIERSON and SMITH.

CATALOGUE, STUDENT ENROLLMENT AND COLLEGE ENTRANCE.

MESSRS. ZIMMERMAN, SPENCE, COTTERMAN, CREESE, GWINNER and P. I. REED.

COURSES OF STUDY.

MESSRS. COTTERMAN, R. C. REED, McDONNELL, SPENCE, ZIMMERMAN, T. H. TALIAFERRO and EMERSON.

DORMITORIES AND STUDENT ORGANIZATIONS.

MESSRS. BYRD, BROUGHTON, SCHULZ, BOMBERGER and CLASS PRESIDENTS.

GRADUATE WORK.

THE PRESIDENT and MESSRS. COTTERMAN, T. H. TALIAFERRO, PATTERSON, R. C. REED, McDONNELL, APPLEMAN and ROSE.

LIBRARY.

MESSRS. W. T. L. TALIAFERRO, GWINNER, SPENCE, BROUGHTON, SCHULZ, MISS CONNER, NORTON, APPLEMAN, SYMONS and WENTZ.

PHYSICAL TRAINING.

MESSRS. BYRD, BOMBERGER, RICHARDSON, W. D. GROFF, '00; H. C. WHITFORD, '01;
and two students.

PUBLIC FUNCTIONS.

MESSRS. T. H. TALIAFERRO, BOMBERGER, RICHARDSON, CORY, METZGER,
W. T. L. TALIAFERRO and THE COMMANDANT.

SANITATION.

MESSRS. GRIFFITH, R. C. REED, McDONNELL, T. H. TALIAFERRO and PIERSON.

SCHEDULE.

MESSRS. GWINNER, BROUGHTON, WENTZ, SPENCE, SCHULZ, ROSE, GAMBLE and
KRAMER.

SOCIAL ACTIVITIES.

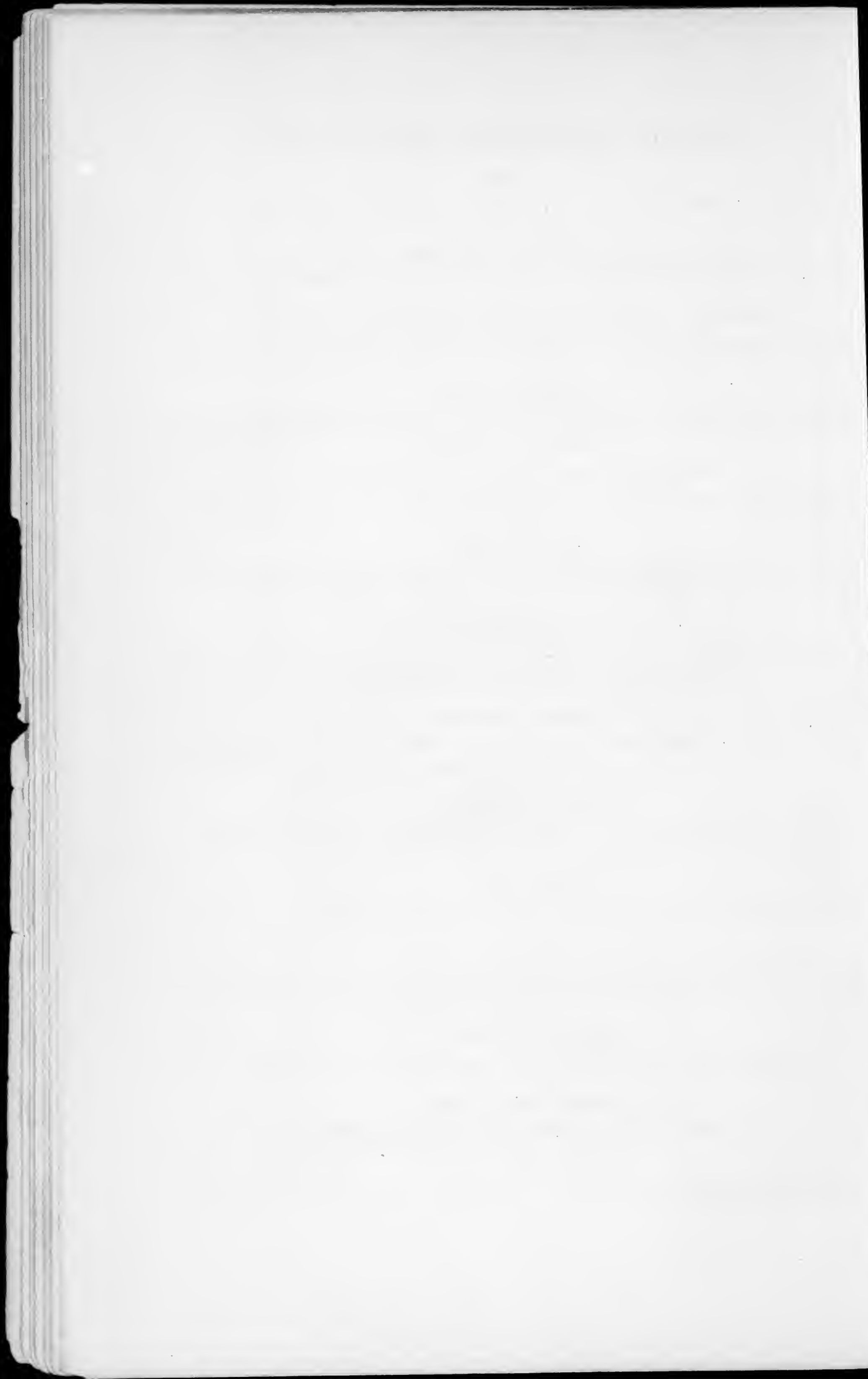
MESSRS. CORY, RICHARDSON, CRISP, BECKENSTRATER and WENTZ.

STUDENT PUBLICATIONS.

MESSRS. P. I. REED, RICHARDSON, BYRD and JORDAN.

COLLEGE PUBLICATIONS.

MESSRS. PATTERSON, BYRD, JORDAN, McDONNELL, RICHARDSON and SYMON



GENERAL INFORMATION

History—The scientific study of agriculture was advocated by farseeing Maryland citizens as early as the second quarter of the nineteenth century. They were sensible of two facts—namely, that agriculture is one of the largest contributing factors to a nation's prosperity, and that all agricultural pursuits, in order to be potent, must be genuinely scientific. In 1847 the subject was first brought formally to the attention of the Legislature of the State. In 1856 a bill was passed which granted a charter for the establishment, endowment and incorporation of the Maryland Agricultural College. Under the provisions of this charter the corner-stone of the original college building was laid on August 24, 1858, and the institution was opened to the public on October 5, 1859. No funds were provided by the Act of 1856, but the actual establishment of the College was made possible by the contributions of public-spirited citizens of the commonwealth. The names of these persons, in remembrance of their generosity, are inscribed on the massive gateway to the College grounds. The College is unique in that its original charter was the first in which systematic agricultural experimentation was recognized as an important part of its activities. The institution thus created was the first significant agricultural college on the Atlantic slope and the second in the Western Hemisphere.

For three years the College was under private management. In 1862 the Congress of the United States, recognizing the practical value and increasing need of such colleges, passed the Land Grant Act. This act granted each State and Territory that should claim its benefits a proportionate amount of unclaimed Western lands, in place of scrip, the proceeds from the sale of which should apply under certain conditions to the "endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach

such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." This grant was accepted by the General Assembly of Maryland. The Maryland Agricultural College was named as the beneficiary of the grant. Thus the College became, at least in part, a State institution; in the fall of 1914 its control was taken over entirely by the State. In 1916 the General Assembly granted a new charter to the College and changed its name from The Maryland Agricultural College to The Maryland State College of Agriculture.

In 1847 an act had been passed making provision for a State laboratory in which the application of chemistry to agriculture was to be undertaken. In 1858, following the selection of a location for the College, experimentation was undertaken on the College farm. After two or three years this work was interrupted by the general financial distress of the time and by the Civil War. In 1888, under the provisions of the Hatch Act of the preceding year, the Agricultural Experiment Station was established as a department of the College.

Other major divisions of the College, together with the dates of their establishment, are as follows: State Department of Fertilizer, Feed and Agricultural Lime Control, 1894; State Department of Farmers' Institutes, 1896; State Horticultural Department, 1898; Extension Service, 1914, and Vocational Training, 1918. The State Bureau of Forestry co-operates with the College, the director being, by the terms of his appointment, Lecturer on Forestry.

The progress of the College, though not rapid, has been steady and in the main satisfactory. By virtue of the broad scope of its activities it is the most important factor in the agricultural and industrial development of the State.

Agricultural Experiment Station—This is a distinct department of the College and is primarily an institution of scientific research for the benefit of agriculture. It was called into existence as a result of the passage of the United States Hatch Act

in 1887. This act states the object and purpose of the Experiment Station as follows:

That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject, with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural or artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective States or Territories.

Prior to the establishment of the Experiment Stations there was practically no agricultural science in this country. The work done by these institutions during the past quarter of a century has given the colleges a science of agriculture to teach, and laid a broad foundation for the future development of the agriculture of the country.

The placing of agricultural demonstrations and extension work on a national basis has been the direct outgrowth of the work of the Experiment Station.

The students of the College are kept in close touch by their professors with the investigations in progress. Also they receive special lectures and instruction by the persons in charge of investigations. Some students are employed by the station on the farm and in the laboratories. The station offers several research fellowships to students who desire to study for advanced degrees. These fellowships are open to graduates of other colleges as well as of this institution. They pay from \$40 to \$60 per month, depending upon the nature of the work and amount of time given to station work.

Extension Service—The Extension Service of the College, in co-operation with the United States Department of Agricul-

ture, performs the important function of carrying to the people of the State, through practical demonstrations conducted by specialists and county agents, the results of investigations in the fields of Agriculture and Home Economics. The organization consists of the administrative forces, including the director, assistant director, specialists and clerical force, on the one hand; and the field forces, including the county agricultural demonstration agents and the home demonstration agents in each county and in the chief cities of the State, on the other.

Each specialist is responsible for a certain project. The county agents and the specialists jointly carry on practical demonstrations under the several projects by inducing the farmers and home-makers to follow specific directions in the production of some certain crop, or in some phase of home-making, with the view of putting into practice on the farms of the State improved methods of Agriculture and Home Economics that have stood the test of investigation and experimentation. Movable schools, lasting sometimes many days, are held in the several counties. At such schools the specialists discuss phases of Agriculture and Home Economics in which the people of the respective counties are specially interested.

The work of the Boys' Agricultural Clubs is of especial importance from an educational point of view. The specialists in charge of these projects, in co-operation with the county agricultural agents, organize the boys of the several communities of the county into agricultural clubs for the purpose of teaching them by actual practice the principles underlying the growing of an acre of corn, an eighth acre of potatoes or the raising of a pig or a flock of poultry. The boys hold regular meetings for the discussion of problems connected with their several projects and for the comparison of experiences. Prizes are offered for the stimulation of interest in the work.

The Home Economics specialists and agents organize the girls into clubs for the purpose of instructing them in the principles underlying canning, drying, preserving of fruits and vegetables, cooking, dressmaking and other forms of Home Economics work. In the club work the boys and girls learn

how to do by doing. One thousand two hundred and thirteen boys and 2,045 girls were enrolled in clubs in 1917.

Educational value of the demonstration work, farmers' meetings, movable schools, the club work and community shows is incalculable. The effect is to carry the College to the farmer and home-maker.

Board of Trustees—This board consists of nine persons who are citizens of the State, each appointed by the Governor, with the advice and consent of the Senate, for a term of nine years. Thus under normal conditions one new appointment is made to the board each year. A special act provides that the persons appointed as trustees shall also be appointed as the State Board of Agriculture.

Support—The College is supported by Federal funds and by appropriations of the State Legislature. The first Morrill, or Land Grant, Act of 1862 allotted 210,000 acres of land to Maryland, the proceeds from the sale of which have been invested for the benefit of the College. From this endowment the College receives \$5,979 a year. The second Morrill Act of 1890 appropriated \$25,000 a year for educational purposes, and the College became the beneficiary. In 1907, by the Nelson Act \$25,000 more was appropriated. The purposes to which these amounts may be applied are restricted. Furthermore, a certain proportion of the Federal funds goes for the support of the Eastern Branch of the Maryland State College of Agriculture, which is devoted to the education of the colored race in agriculture and the mechanic arts. The Smith-Hughes Act of 1917 provides annually an increasing amount for the training of teachers in agriculture, the industrial arts and home economics, and in addition gives aid to secondary schools for the promotion of vocational education. The assignment of a portion of this work to the State College of Agriculture brings it into even closer co-operation with the State Board of Education and the schools of the State. The College thus becomes, as it should, the crowning point of the State educational system.

Under the Hatch Act of 1887 and the Adams Act of 1906 \$30,000 is appropriated annually by the Federal Government for the organization and support of agricultural experiment stations.

The Smith-Lever Act, passed by Congress in 1914, grants yearly an increasing appropriation for agricultural and home-economics extension work in the State.

In addition to the above Federal funds, appropriations have been made by the State Legislature for the erection of buildings, payment of salaries, etc.

Location and Description—The College is located in Prince George's County, Maryland, on the line of the Washington Branch of the Baltimore and Ohio Railroad, eight miles from Washington and thirty-two miles from Baltimore. At least eight trains a day from each city stop at College Station, thus making the place easily accessible from all parts of the State. Telephone connection is made with the Chesapeake and Potomac lines.

The grounds front on the Baltimore and Washington Boulevard. The suburban town of Hyattsville is two miles to the south, and Laurel, the largest town in the county, is ten miles to the north on the same road. Access to these towns and to Washington may be had by steam and electric railway. The site of the College is particularly beautiful. The buildings occupy the crest of a commanding hill, which is covered with forest trees and overlooks the entire surrounding country. In front, extending to the boulevard, is a broad rolling campus, the drill ground and athletic field. In the rear are the farm buildings and barn. A quarter of a mile to the northeast are the buildings of the Experiment Station. The College farm contains about 300 acres, and is devoted to fields, gardens, orchards, vineyard, poultry yards, etc., used for experimental purposes and demonstration work in agriculture and horticulture.

The general appearance of the College grounds is exceedingly attractive. They are tastefully laid off in lawns and terraces which are ornamented with shrubbery and flower beds. The view from the grove and campus cannot be surpassed.

The location of the College is healthful; the sanitary conditions are excellent. No better proof of this can be given than that there has been practically no serious case of illness among the students for many years.

Health Service—The health of the student body is of prime importance to the College and it is in consequence carefully conserved. A physician is engaged by the College especially for this work. A hospital is maintained in which students, whenever necessary, are put under the care of a trained nurse.

Buildings—The executive and instructional divisions of the College have quarters in the following structures: A brick building, erected in 1894 as a gymnasium and now used temporarily as a library; a chemical building, completed in 1897, used both for instruction in chemistry and for State work in the analysis of fertilizers, feeds and agricultural lime; Morrill Hall, built in 1898, in which the Division of Language and Literature is situated, as well as the Zoological classrooms and laboratories; an engineering building, erected in 1898, which provides suitable quarters for the Departments of Civil, Electrical and Mechanical Engineering and the Departments of Mathematics and Physics; a horticultural building, built in 1915, which contains offices, classrooms and propagating rooms; and a large, modern fireproof building, finished in 1918, which contains the executive offices and is devoted almost exclusively to instruction in the agricultural sciences.

On account of the destruction by fire in 1912 of two of the largest buildings, two temporary structures are in use as an assembly hall and a dining hall. Excellent dormitory accommodations are provided in Calvert Hall, a modern fireproof building erected in 1914. The Armory is also located in it. Other buildings on the campus furnish living quarters for a number of students. A frame building, formerly the president's home, is occupied temporarily by the Department of Home Economics. The College Sanitarium, built in 1901, makes it possible to treat properly any case of illness among the students.

Library—In 1915 the College library and that of the Experiment Station were consolidated, and are now administered

under one head. The first floor of the Library Building is devoted to books and periodicals relating to agriculture and allied sciences. The second floor is used as a general reading room, and also as a stackroom for the more general classes of books.

The combined libraries contain approximately 15,000 books and pamphlets. Most of the leading magazines and newspapers are subscribed for; technical periodicals, as a rule, are deposited in the libraries of the various departments of the College and Experiment Station. Through the generosity of the county press of the State, most of the county papers are available for use by the patrons of the library.

The central, basic idea of the administration of the library is service. It is frankly recognized that the library should be a laboratory for the use of students, members of the faculty and members of the Experiment Station staff; and everything possible is done to make the library popular. The reading rooms are well arranged and lighted, and are in all respects comfortable and convenient. Every facility is offered to those desiring to make researches within the scope of the books and publications on the shelves of the library.

Religious Influences—Provisions in the charter of the College provide that it shall be non-sectarian. From time to time religious services are conducted at the College under the direction of different churches. Churches of practically all denominations are located within a radius of two miles.

Christian Associations—"The moral and spiritual welfare of any community lies within the community itself," and through the Young Men's and Young Women's Christian Associations the students of Maryland State College accept this responsibility. Primary purpose of these organizations is to develop the moral life of the College. The basis of membership is non-sectarian and broad enough to allow every student who stands for Christian ideals to affiliate himself or herself with them. The associations seek to create an atmosphere of democratic good fellowship and high standard among the student body. The Young Men's and Young Women's Christian Associations

are anxious to assist new students in every way possible. Their representative will meet them at the railroad station, direct them to the College, help them get located in their rooms, and make them acquainted with other students and the faculty.

Lectures—Lectures of a general and a technical character have been an important feature of the College activities for several years. The lectures are often given in connection with motion pictures or other special entertainments during the assembly periods, when all students as well as visitors can attend. Aside from the meetings of general interest each division of the College calls in specialists from the various practical fields of activity to lecture to groups of students according to their interests.

Student Organizations—The athletic, social, literary and scientific interests of the College give occasion for various student organizations. These are encouraged as a means of creating class and college pride, and as aids toward the development of the student in his conduct of affairs. In science there are the Agricultural Club, the Engineering Society and the Liebig Chemical Society. To foster public speaking and literary interest there are two literary societies, the Poe and the New Mercer. These are under the direction of the professor of public speaking, which subject every student is required to take. As a further means of stimulating interest in public speaking, there exists the Oratorical Association of Maryland Colleges. This organization is composed of the following colleges: St. John's College, Washington College, Western Maryland College and the Maryland State College. Contests are held annually in rotation at these four institutions. The Rossbourg Club, the county clubs and the fraternities promote wholesome social relations.

Student Publications—"The Maryland State Weekly," the students' newspaper, is issued each week while the College is in session. It is published by a staff representing each class. "The Reveille," a record of general student activity, is brought out at the close of each year by the senior class.

Alumni Association—The alumni of the College, including men of note in all fields of endeavor, through their organization exert a stimulating influence in molding public opinion in behalf of the College and in bettering conditions in the institution. They are also active individually in the development of the College. The association offers medals for excellence in debate and intercollegiate athletic competition, and through its members on the Committee on Physical Training endeavors to promote lofty ideals and high achievement in athletics.

The present officers of the association are: R. Laurie Mitchell, '02, president; George H. Calvert, Jr., '02, vice-president; H. C. Byrd, '08, secretary-treasurer; J. N. Mackall, '05, and F. P. Veitch, '91, members at large of the executive committee, and W. D. Groff, '00, and H. C. Whitford, '01, members of the athletic committee.

Military Instruction—An infantry unit of the senior division of the Reserve Officers' Training Corps has been established at the College under the provisions of the Act of Congress of June 3, 1916. All male students, if citizens of the United States, whether pursuing a four-year or a two-year course of study, are required to take for a period of two years, as a prerequisite to graduation, the military training furnished by the War Department in accordance with the aforementioned act. Three periods a week of not less than one hour each are devoted to this work, of which one period is utilized for theoretical instruction. At the end of the sophomore year a student may volunteer for further training. His record is examined by the president of the College and the professor of military science and tactics. If accepted, the volunteer will, after signing a written agreement prescribed by the Secretary of War, be enrolled for two or more years of training in the Reserve Officers' Training Corps. Such students are required to give four hours a week to this advanced training, three of which are utilized for theoretical instruction. These students are required also to attend two summer camps of four weeks each. Any student completing this advanced training course is eligi-

ble for appointment by the President of the United States as a Reserve Officer of the United States Army for a period of ten years. They are also eligible for appointment, under certain prescribed conditions, as temporary second lieutenants in the Regular Army for a period of six months.

The Federal Government furnishes uniforms, or commutation therefor, to all members of the Reserve Officers' Training Corps, and also commutation of subsistence to such students as are selected for advanced training during the junior and senior years. The Government furthermore pays the expenses of attendance at the required summer training camps, including traveling expenses.

All physically fit male students, not members of the Reserve Officers' Training Corps, are required by the College regulations to take two hours a week each year of practical drill, unless excused by the President for some satisfactory reason.

College credit is given for work in the Reserve Officers' Training Corps. Since the credits obtained for the first two years of this training are prerequisite to graduation, any student of either sex who for any reason whatever does not take this work must elect approved subjects in place thereof to obtain equivalent credits.

Athletics—Upon the opening of College in the fall athletics will be conducted under a plan of organization tending to give every student an opportunity to take part in some branch of competitive sports. The whole Department of Physical Training is being reorganized so that all students will receive a comprehensive development along natural lines. The preliminary part of the work will consist of squad drills in calisthenics and a thorough examination by a competent physician. The squad drills are to be supplemented by intra-mural athletics, with class organizations as the units. Baseball, track and field, basketball, boxing and wrestling will be the main intra-mural sports. The teams developed for intercollegiate competition will be made up of men selected from the best of those taking part in the regular sports between classes and other units. In intercollegiate competition the College is represented in football,

baseball, track and field, basketball, lacrosse and tennis. The athletics of the College is conducted on principles calculated to give the students development in ethics and character as well as physical strength. The rules governing the eligibility of students for places on teams in intercollegiate competition are more stringent than those of any other institution in Maryland. The department works in conjunction with the Department of Military Science and Tactics.

Student Government—The government of the student body is based on a spirit of pure democracy. The students are taught not only the theory of self-government but the practice. All affairs relating to the student body are adjudicated by a committee composed of four members of the faculty and the presidents of the classes. This committee establishes a definite and close relationship between the faculty and students. The whole idea of government of the student body is based on the honor system, in which each student is trusted to do the "square thing."

Divisions and Courses of Instruction—The College performs its various functions through organization into divisions and departments. These unite in offering a number of closely related courses leading, after four years of general and specialized study, to the bachelor's degree. All courses are practically alike in the freshman year, for this is largely a probationary period in which the student is supposed to determine definitely which of the several courses he wishes to pursue. After the Freshman year a change in course is not permitted unless warranted by exceptional circumstances. A substantial foundation is laid during the first year. The opportunity for specialization and election increases with each succeeding year. Upon reaching the senior year the work of each student is almost wholly specialized.

A student when entering will select the division in which he expects to work, and furthermore will elect his course after consultation with the dean of the division. The divisions and the courses offered by them are given below:

Division of Animal Industry—Courses in Animal Husbandry.

Division of Applied Science—Courses in Chemistry and General Science.

Division of Vocational Education—Courses in Agricultural Education, Home-Economics Education and Industrial Education.

Division of Engineering—Courses in Civil Engineering, Electrical Engineering, Mechanical Engineering and Rural Engineering.

Division of Language and Literature—Auxiliary instruction in Language and Literature.

Division of Plant Industry—Courses in Agronomy, Botany, Entomology, Landscape Gardening and Floriculture, Pomology and Vegetable Culture.

A detailed statement as to the subjects studied in each of these courses will be found under the various divisions. Here may be found also the amount of time given to each subject, its credit value and the opportunity for election. In certain technical courses, such as engineering, little latitude is allowed in selecting subjects, after the student has once settled on a particular course. On the other hand, in the agricultural courses a wide selection is permitted. The reasons for this difference in procedure are obvious when the development of the courses and the character of the subjects are considered.

Short Courses in Agriculture—The short courses in the College are designed especially to meet the demands of young men on the farm who cannot find time to take a regular four-year course, or for those who have not had sufficient educational training for admission to the longer courses. Aside from the winter unit-courses the College offers a Two-Year Agricultural Course and a Three-Year Agricultural Practice Course. The two-year course runs for the entire college year, while the three-year course runs for three months (December, January and February) during the winter.

Short Course in Engineering—A two-year course in Engineering, embodying work in the mechanic arts, is offered to young men who are unable, for various reasons, to take any of the four-year courses in Engineering. It gives an opportunity for training in Mechanics or Electricity at the option of the student.

Graduation, Degrees and Certificates—All four-year courses in the College lead to the degree of Bachelor of Science. The

total requirement for graduation, exclusive of military science is 204 term credit hours, equivalent to 68 year hours, or 136 semester hours. A term credit hour is one lecture or recitation a week for one term; two or three hours of laboratory or field work are counted equivalent to one lecture or recitation. All practical work is scheduled for three hours, but the instructor concerned is permitted to use two or three, depending upon the nature of the work.

Candidates are recommended for graduation after they have completed the prescribed course of study, including all the required work and enough electives to total 204 credit hours, not including military science. No degrees are given to students in the Two-Year or the Three-Year Agricultural Practice Courses, but at graduation time appropriate certificates are granted to those completing the regular work as outlined.

Graduate Study and Advanced Degrees—The advanced degrees conferred by the College are Master of Science and professional engineering degrees as follows: Civil Engineer, Electrical Engineer and Mechanical Engineer. A candidate for graduate work in science must hold a Bachelor's degree from an institution of recognized standing and present the basic prerequisites to the field in which he wishes to study. For the degree of Master of Science one year of residence wholly devoted to graduate work is required. Under this ruling it will require a student working half time at least two years to qualify for the Master's degree, and one doing less than half-time work three years. While the requirement for the Master's degree is not conditional to the completion of a definite number of hours, the amount of work required should usually aggregate not less than the equivalent of fifteen credit hours per week through the year, inclusive of the thesis. To fulfill the requirements for the Master's degree the student must complete an approved course of study, consisting of a major subject and two minors, one of which must be in a different department from the major and relate in general character to that subject. The minor subjects should aggregate not less than five credit hours nor more than seven per week through the year.

When special organization has been made for that purpose, credit may be given for research carried on in the Department of Agriculture of the United States Government. The Experiment Station also offers considerable opportunity for research of a graduate character.

Admission to graduate work does not necessarily imply admission to candidacy for a degree. Those seeking admission to graduate work should request an application blank and further information from the registrar. A candidate for the Master's degree must present his application for admission to candidacy not less than six months prior to the date at which the degree is sought. Admission to candidacy is based upon ability to pursue graduate work as exemplified in the official reports upon the student's course. A student will not be admitted to candidacy until he has completed the equivalent of one term of graduate work.

A satisfactory thesis is required, the subject of which, together with the written approval of the professor in charge of the major, must be filed with the chairman of the Graduate Committee not later than the close of the first term of the academic year in which the degree is sought. The completed manuscript ready for typewriting shall be submitted to the professor in charge for correction and approval not later than two weeks prior to commencement day.

The advanced professional degrees in engineering will be granted only to graduates of this College, who have obtained the Bachelor's degree in engineering. A candidate for the degree of Civil Engineer, Electrical Engineer or Mechanical Engineer must satisfy the following conditions:

1. He shall have been engaged in acceptable engineering pursuits for not less than three years.
2. His application for a degree must be approved twelve months prior to the date at which the degree is sought.
3. He shall present a satisfactory thesis.
4. He shall present with his application a complete report of his engineering experience and an outline of his thesis.

5. He must be considered eligible by a committee composed of the heads of the Civil, Electrical and Mechanical Engineering Departments, to whom his application must be referred.

Unclassified Students—Mature persons who have had insufficient preparation to pursue any of the four-year courses may, with the consent of the Committee on Courses, matriculate for such subjects as they are fitted to take. Such students, however, will be ineligible for a degree until they have satisfied the entrance requirements and completed an approved four-year course of study.

Sub-Collegiate Work—Until recently the College maintained a sub-collegiate department for the benefit of students registering with deficiencies. At the present time a plan is under consideration which will afford students an opportunity to remove such deficiencies in a nearby high school. It may be possible for students not having the advantages of a high school in their community to do several years of high school work under this co-operative plan.

Examinations and Reports—Final examinations are held at the close of each term. The final grades are made from these examinations and the daily averages. Detailed reports of the students' standing are sent to parents and guardians at the end of every term. Special reports of deficiencies, failures or misconduct are sent whenever deemed necessary.

Admission Requirements of the College—In general the requirements for admission to the freshman class are the same as those prescribed for graduation by the approved high schools of Maryland. An applicant must offer for admission at least 15 units of credit by examination, or by a certificate from an approved high school or its equivalent. A unit represents a year's study in any subject in a secondary school and constitutes approximately a quarter of a full year's work. It presupposes a school year of 36 to 40 weeks, recitation periods of from 40 to 60 minutes, and for each study four or five class exercises a week. Two laboratory periods in any science or vocational study are considered as equivalent to one class exercise.

Of the fifteen units presented, seven are specifically designated—eight for Division of Engineering—and eight may be elected from any subject that the high school offers toward graduation. A deficiency of two units is approved under the condition that the student remove such conditions within 12 months after matriculation.

Students are admitted without examination, if they can present certificates showing that they have completed the necessary entrance subjects. The certificates presented by the candidates must be officially certified by the principals of the schools attended and must state in detail the work completed. Blank certificates conveniently arranged for the desired data will be sent upon application.

Candidates not admitted by certificates will be required to take written examinations on the entrance subjects. These examinations are offered in June and September. Exact dates will be sent upon request.

REQUIRED AND ELECTIVE SUBJECTS

Prescribed Units

| | |
|-------------------|------------------------|
| English | 3 |
| Mathematics | 2 (For Engineering 3)* |
| Science | 1 |
| History | 1 |

—
Total..... 7 (For Engineering 8)

Elective Units (eight)—To be selected from the following subjects:

Agriculture,
Astronomy,
Botany,
Chemistry,
Civics,
Commercial subjects,
Economics,
English,
General Science
Geology,

History,
Home Economics,
Industrial subjects,
Language,
Mathematics,
Physical Geography,
Physics,
Physiology,
Zoology.

*Additional unit includes Algebra, $\frac{1}{2}$; Solid Geometry, $\frac{1}{2}$.

A student coming from a standard college or university may secure advanced standing by presenting a statement of his complete academic record certified by the proper officials. This statement must be accompanied by a set of secondary school credentials presented for admission to the college or university. Full credit is given for work done in other institutions when found to be equivalent in extent and quality to that required at this College. An applicant may request examination for advanced credit in any subject. In case the character of a student's work in any subject is such as to create doubt as to the quality of that which preceded, the College explicitly reserves the right to revoke at any time any credit assigned on certificate.

Registration—The College year begins October 1 and ends May 30. (See calendar on Page 1.) Monday, September 30, and Tuesday, October 1, are devoted to matriculation and registration of students for the first term. Registration for the second and third terms takes place on the first day of the terms as indicated by the calendar.

Candidates for the freshman class should go at once to the new agricultural building, where they will find a committee in charge of matriculation and registration.

Upper classmen should consult their advisers or deans and then proceed in the regular way. Students are not admitted to classes for which they are not registered in due form.

Lectures and practical work begin as scheduled on Wednesday, October 2.

Expenses—Average expenses of a student for each year range around \$300. The College is not organized as a money-making institution, consequently holds expenses to a minimum. Board is one item which fluctuates somewhat under present conditions, but not sufficiently to make any material difference in the outlay for the year. Board and lodging are furnished on a wholesale cost basis.

SUMMARY OF EXPENSES

| | |
|---|----------|
| Fixed overhead charges, physical training, hospital fees, book rental, etc..... | \$50.00 |
| Laboratory fees..... | 12.00 |
| Damage fee*..... | 5.00 |
| Board, lodging and laundry†..... | 239.00 |
| Total..... | \$306.00 |

*Unexpended portion refunded at end of year.

†Average cost.

A fee of \$5 for the diploma will be charged each student to whom a Bachelor's degree is granted.

Each graduate student is subject to a registration fee of \$10, payable at time of registration; \$10 per term for tuition and \$10 for diploma, payable before degree is conferred.

Students taking the short course in Agricultural Practice are subject to charges of \$20 for fixed overhead charges, hospital fee, book rental, laboratory fee, etc., and \$7.50 per week for board, lodging and laundry.

A deposit fee of \$5 is required of each student desiring to reserve a room in one of the dormitories. Such reservations may be made on or after June 1. This fee will be credited to the student's account, but if he fails to return to or enter College it will be forfeited.

Students entering College after November 1, or withdrawing before close of scholastic year, will be charged \$7 per month for fixed charges and \$8 per week for board, room and laundry. Students withdrawing less than two weeks after entrance will be charged \$2 per day, and students withdrawing more than two weeks, but less than one month, after entrance will be charged for one month's attendance.

In case of illness requiring a special nurse and special medical attention, the expenses must be borne by the student.

All College expenses are payable in advance, and no diploma will be conferred upon, nor any certificate issued to, a student who is in arrears in his account.

When a student withdraws from College he is required to give formal notification in writing in separate communications to the Registrar and Accountant. Charges for full time will be continued against him unless this is done.

Students rooming outside the College may obtain board and laundry from the College at same rates as those living in dormitories.

Day students may get lunch at nearby lunchrooms.

All College property in possession of the individual student is charged against him, and the parent or guardian must assume responsibility for its return without injury other than results from ordinary wear.

Damage to College property will be charged to the whole student body pro rata unless the offender is known.

All students assigned to dormitories are required to provide themselves with one pair blankets for single bed, two pairs sheets for single bed, four pillow cases, six towels, one pillow and two clothes bags.

There will be no refund of laboratory fees upon withdrawal of a student after the middle of a term.

There will be no refund of fixed charges or laboratory fees upon the withdrawal of a student after the middle of the term for which charge is made.

Uniform—Members of the Student Battalion must appear in uniform at all military formations and at other specified times. The uniforms worn by the members of the Reserve Officers' Training Corps under normal conditions are furnished by the War Department. It is possible, however, that with the great demand for uniforms for the army the Government will not be able to supply uniforms for the members of the Reserve Officers' Training Camp, but will provide commutation which will meet, at least in part, the cost of the uniforms provided by these students. Students required to drill under the provisions of the "Land Grant Act" of 1862, who are not members of the Reserve Officers' Training Corps, must furnish their own uniforms.

Prices fluctuate to such an unusual degree at this time that it is not possible to state definitely the cost of a uniform not provided by the Government, but it should not exceed \$30. A deposit covering the cost of a uniform purchased under a College contract must be made with the Accountant in advance. No uniform will be paid for by the College until it is approved by the Professor of Military Science and Tactics.

The uniform consists of one pair breeches, woolen, olive drab; one cap, olive drab; one pair leggings, canvas; one cap and collar ornament, set; one pair shoes, russet; one shirt, flannel, olive drab, and one regulation tie.

Scholarships and Financial Aid—Although no endowment or loan fund exists with which to assist needy students, there are many opportunities for students to earn at least a portion of their expenses. Means of self-help, however, are afforded only to such students as show ability to carry work in addition to their College course, and to those who are disposed to assume such extra duties willingly. Scholarships are offered as indicated below:

To encourage worthy young men who desire a collegiate education, the Board of Trustees has established for each high school in Maryland and the District of Columbia one scholarship each year, to be awarded under the following conditions:

1. The person awarded a scholarship must be a graduate of a high school and qualified to enter the freshman class. He must also be of approved moral character.

2. The appointment to a scholarship shall be made by the school superintendent, upon the recommendation and certification of the principal of the high school.

The principal of the high school may recommend one or more persons for appointment, with information as to the merits of each case. In making appointments, not only class standing but inability to meet the financial expenses of an education should be given consideration.

3. The appointment shall be made for the term normally required to complete the course selected.

4. Each scholarship has the value of \$50 per year. This amount will be credited to the holder's account.

5. The scholarship will be forfeited by indifference to scholastic work or by disregard of rules of the College.

6. The scholarship will be forfeited in case the holder fails of promotion at the end of any scholastic year, unless there are extenuating circumstances.

There has also been established one scholarship each year for graduates of each preparatory school in Maryland and the District of Columbia in which the standard is of such a character as to qualify the appointee for entrance to the freshman class. The conditions governing these scholarships are the same as for the high schools, except that the appointment shall be made by the principal of the preparatory school.

Division of Plant Industry

OFFICERS OF INSTRUCTION

- P. W. ZIMMERMAN..Dean, Professor of Plant Industry.
J. B. WENTZ.....Professor of Agronomy.
C. E. TEMPLE.....Professor of Plant Pathology, State Pathologist.
E. F. STODDARD.....Professor of Vegetable Gardening.
H. BECKENSTRATER..Professor of Pomology.
B. W. ANSPON.....Professor of Landscape Gardening and Floriculture.
J. B. S. NORTON....Professor of Botany and Vegetable Pathology.
R. C. ROSE.....Associate Professor of Botany.
E. N. CORY.....Professor of Entomology, State Entomologist.
C. J. PIERSON.....Assistant Professor of Zoology.
O. C. BRUCE.....Professor of Soils.

INTRODUCTION

The Division of Plant Industry is composed of the following departments:

- | | |
|------------------------------|----------------------|
| 1. Agronomy. | 4. Forestry. |
| a. Forage Crops. | 5. Economic Botany. |
| b. Grain Crops. | a. General Botany. |
| 2. Soils and Soil Fertility. | b. Plant Physiology. |
| 3. Horticulture. | c. Plant Pathology. |
| a. Vegetable Gardening. | 6. Economic Zoology. |
| b. Pomology. | a. General Zoology. |
| c. Landscape Gardening and | b. Entomology. |
| Floriculture. | c. Bee Culture. |

Students are permitted to specialize in any of the above-mentioned departments except Forestry. Prospective students for Agronomy, Soils or Horticulture who have not had satisfactory practical experience on a farm before entering College will be required to spend from three to six months on an approved farm before graduation.

The subjects required in the freshman year are the same in all departments, but at the end of the year students are expected to make a decision in regard to their line of special-

ization. The junior and senior years are devoted largely to special subjects and electives. At least 25 per cent. of the total hours required for graduation are necessary to specialize in a subject. With a wide leeway for electives it is possible for a student to take as much work in another department as in his special subject. It is possible, therefore, for a student to get either a special or a general training in agriculture. Specialists who expect to carry on investigational work after leaving College are urged to remain for graduate work.

OUTLINE OF COURSES OFFERED

The required and elective work of the various departments of the division is outlined on the following pages. The College reserves the right to withdraw any course at any time:

AGRONOMY AND SOILS

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or Language..... | 4 | 4 | 4 |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Soils 101—Introductory Study of Soils..... | ..... | 3(3) | ..... |
| Geology 102—General Geology..... | ..... | ..... | 3(3) |
| Botany 102—Plant Histology..... | 2(3) | ..... | ..... |
| Botany 103—Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 104—Plant Physiology..... | ..... | ..... | 2(6) |
| Pomology 101—Principles of Pomology..... | 3(3) | ..... | ..... |
| Landscape and Floriculture 101—Principles of Landscape Gardening..... | ..... | 3(3) | ..... |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | ..... | ..... | 3(3) |
| Agronomy 102—Grain Judging..... | ..... | (3) | ..... |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 6 | 4 | 5 |
| JUNIOR YEAR. | | | |
| Soils 102—Continuation of 101..... | 2(3) | ..... | ..... |
| Agronomy 103—Forage Crops..... | ..... | ..... | 3(3) |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| English 103—Technical Composition..... | 2 | 2 | 2 |
| Botany 110—Genetics..... | ..... | 3 | ..... |
| Bacteriology 101—General Bacteriology..... | 1(6) | ..... | ..... |
| Soils 103—Principles of Soil Management..... | ..... | 1(6) | ..... |
| Agronomy 106—Marketing and Grading of Farm Crops..... | ..... | 1(3) | ..... |
| Soils 104—Fertilizers..... | ..... | ..... | 2(3) |
| Military Instruction—Advanced Course..... | R | R | R |
| Elective..... | 6 | 4 | 8 |
| SENIOR YEAR. | | | |
| Rural Economics 107—Farm Management..... | ..... | 3(3) | 3(3) |
| Agronomy 104—Crop Breeding..... | ..... | 2(3) | (3) |
| Agronomy 105—Methods in Crop Investigation..... | 2(3) | ..... | ..... |
| Agronomy 108—Crop Rotation..... | 2 | ..... | ..... |
| Soils 105—Advanced Soils..... | 1(6) | ..... | ..... |
| Soils 106—Methods in Soil Investigation..... | ..... | ..... | 1(6) |
| Agronomy 109—Seminar..... | ..... | 1 | ..... |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 9 | 9 | 9 |

VEGETABLE GARDENING

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or..... } | 4 | 4 | 4 |
| Language..... | ..... | ..... | ..... |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Soils 101—Introductory Study of Soils..... | ..... | 3(3) | ..... |
| Geology 102—General Geology..... | ..... | ..... | 3(3) |
| Botany 102—Plant Histology..... | 2(3) | ..... | ..... |
| Botany 103—Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 104—Plant Physiology..... | ..... | ..... | 2(6) |
| Pomology 101—Principles of Pomology..... | 3(3) | ..... | ..... |
| Landscape and Floriculture 101—Principles of Landscape Gardening..... | ..... | 3(3) | ..... |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | ..... | ..... | 3(3) |
| Agronomy 102—Grain Judging..... | ..... | (3) | ..... |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 6 | 5 | 5 |
| JUNIOR YEAR. | | | |
| Soils 102—Continuation of Soils 101..... | 2(3) | ..... | ..... |
| Agronomy 103—Forage Crops..... | ..... | ..... | 3(3) |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| English 103—Technical Composition..... | 2 | 2 | 2 |
| Vegetable Gardening 102—Tuber and Root Crops..... | 2(3) | ..... | ..... |
| Vegetable Gardening 103—Commercial Vegetable Gardening..... | ..... | 2(6) | 2(6) |
| Military Instruction 103—Advanced Course..... | R | R | R |
| Elective..... | 6 | 8 | 7 |
| SENIOR YEAR. | | | |
| Rural Economics 107—Farm Management..... | ..... | 3(3) | 3(3) |
| Vegetable Gardening 103—Commercial Vegetable Gardening continued.... | 2(6) | ..... | ..... |
| Vegetable Gardening 111—Systematic Olericulture..... | 1(6) | ..... | ..... |
| Vegetable Gardening 113—Horticulture Seminar..... | ..... | 1 | ..... |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 10 | 12 | 13 |

POMOLOGY

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or..... | 4 | 4 | 4 |
| Language..... | ..... | ..... | ..... |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Soils 101—Introductory Study of Soils..... | ..... | 3(3) | ..... |
| Geology 102—General Geology..... | ..... | ..... | 3(3) |
| Botany 102—Plant Histology..... | 2(3) | ..... | ..... |
| Botany 103—Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 104—Plant Physiology..... | ..... | ..... | 2(6) |
| Pomology 101—Principles of Pomology..... | 3(3) | ..... | ..... |
| Landscape and Floriculture 101—Principles of Landscape Gardening..... | ..... | 3(3) | ..... |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | ..... | ..... | 3(3) |
| Agronomy 102—Grain Judging..... | ..... | (3) | ..... |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 6 | 5 | 5 |
| JUNIOR YEAR. | | | |
| Soils 102—Continuation of 101..... | 2(3) | ..... | ..... |
| Agronomy 103—Forage Crops..... | ..... | ..... | 3(3) |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| Pomology 102—Commercial Pomology..... | 1(3) | ..... | ..... |
| Pomology 103—Fruit Judging..... | (3) | (3) | ..... |
| Pomology 104—Practical Pomology..... | ..... | 2(3) | (6) |
| Pomology 105—Small Fruit Culture..... | ..... | ..... | 2(3) |
| English 103—Technical Composition..... | 2 | 2 | 2 |
| Botany 110—Genetics..... | ..... | 3 | ..... |
| Military Instruction 103—Advanced Course..... | R | R | R |
| Elective..... | 6 | 5 | 6 |
| SENIOR YEAR. | | | |
| Rural Economics 107—Farm Management..... | ..... | 3(3) | 3(3) |
| Pomology 107—Systematic Pomology..... | 1(6) | (6) | ..... |
| Pomology 109—Origin, Improvement and Breeding of Fruits..... | ..... | ..... | 2(3) |
| Seminar..... | ..... | 1 | ..... |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 14 | 11 | 10 |

LANDSCAPE GARDENING AND FLORICULTURE

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or..... } Language..... } | 4 | 4 | 4 |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Soils 101—Introductory Study of Soils..... | ..... | 3(3) | ..... |
| Geology 102—General Geology..... | ..... | ..... | 3(3) |
| Botany 102—Plant Histology..... | 2(3) | ..... | ..... |
| Botany 103—Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 104—Plant Physiology..... | ..... | ..... | 2(6) |
| Pomology 101—Principles of Pomology..... | 3(3) | ..... | ..... |
| Landscape and Floriculture 101—Principles of Landscape Gardening..... | ..... | 3(3) | ..... |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | ..... | ..... | 3(3) |
| Agronomy 102—Grain Judging..... | ..... | (3) | ..... |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 6 | 5 | 5 |
| JUNIOR YEAR. | | | |
| Soils 102—Continuation of 101..... | 2(3) | ..... | ..... |
| Agronomy 103—Forage Crops..... | ..... | ..... | 3(3) |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| English..... | 2 | 2 | 2 |
| Landscape and Floriculture 102—Plant Materials..... | ..... | ..... | 2(3) |
| Landscape and Floriculture 107—Histology of Landscape Gardening..... | ..... | (3) | ..... |
| Landscape and Floriculture 108—Floriculture..... | 2(3) | ..... | ..... |
| Landscape and Floriculture 109—Commercial Floriculture..... | ..... | 2(3) | ..... |
| Landscape and Floriculture 110—Commercial Floriculture..... | ..... | ..... | 2(3) |
| Military Instruction 103—Advanced Course..... | R | R | R |
| Elective..... | 6 | 8 | 5 |
| SENIOR YEAR. | | | |
| Rural Economics 107—Farm Management..... | ..... | 3(3) | 3(3) |
| Landscape and Floriculture 103—Landscape Design..... | 2(3) | ..... | ..... |
| Landscape and Floriculture 104—Landscape Design..... | ..... | 2(3) | ..... |
| Landscape and Floriculture 105—Landscape Practice..... | ..... | ..... | 1(6) |
| Landscape and Floriculture 106—Civic Art..... | 1(3) | ..... | ..... |
| Landscape and Floriculture 111—Greenhouse Construction..... | 2(3) | ..... | ..... |
| Landscape and Floriculture 112—Floral Decorating..... | ..... | (3) | ..... |
| Landscape and Floriculture 113—Garden Flowers..... | ..... | ..... | 2(3) |
| Landscape and Floriculture 115—Tree Repair..... | 1(6) | ..... | ..... |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 5 | 9 | 7 |

BOTANY

| SUBJECT. | TERM. | | |
|---|-------|------|------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | |
| Chemistry 102—The Metals and Qualitative Analysis..... | | | 2(6) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | |
| Botany 101—General Botany..... | | | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or..... | 4 | 4 | 4 |
| Language..... | | | |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops..... | 3(3) | | |
| Soils 101—Introductory Study of Soils..... | | 3(3) | |
| Geology 102—General Geology..... | | | 3(3) |
| Botany 102—Plant Histology..... | 2(3) | | |
| Botany 103—Plant Physiology..... | | 2(6) | |
| Botany 104—Plant Physiology..... | | | 2(6) |
| Pomology 101—Principles of Pomology..... | 3(3) | | |
| Landscape and Floriculture 101—Principles of Landscape Gardening..... | | 3(3) | |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | | | 3(3) |
| Agronomy 102—Grain Judging..... | | (3) | |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 6 | 5 | 5 |
| JUNIOR YEAR. | | | |
| Soils 102—Continuation of Soils 101..... | 2(3) | | |
| Agronomy 103—Forage Crops..... | | | 3(3) |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | |
| English 103—Technical Composition..... | 2 | 2 | 2 |
| Chemistry 108—Organic Chemistry..... | 3(3) | | |
| Botany 110—Genetics..... | | 3 | |
| Botany 112—Systematic Botany..... | | | 1(6) |
| Military Instruction 103—Advanced Course..... | R | R | R |
| Elective..... | 5 | 9 | 8 |
| SENIOR YEAR. | | | |
| Rural Economics 107—Farm Management..... | | 3(3) | 3(3) |
| Botany 111—Plant Ecology..... | | | 1(6) |
| Botany 113—Plant Morphology..... | | 1(6) | |
| Botany 115—Seminar..... | | 1 | |
| Botany 116—Plant Micro-Chemistry..... | | 1(6) | |
| Botany 114—Methods in Histology..... | (6) | | |
| Botany 105—General Plant Pathology..... | 2(3) | | |
| Chemistry 111—Physiological Chemistry..... | 3(3) | | |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 8 | 6 | 10 |

ECONOMIC ZOOLOGY

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or..... } | 4 | 4 | 4 |
| Language..... } | | | |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Botany 102—Plant Histology..... | 2(3) | ..... | ..... |
| Botany 103—Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 104—Plant Physiology..... | ..... | ..... | 2(6) |
| Chemistry 105—Quantitative Analysis..... | 1(6) | 1(6) | ..... |
| Zoology 102—Histology and Embryology..... | 2(6) | 2(6) | 2(6) |
| Zoology—103—Entomology..... | ..... | ..... | 2(3) |
| English 102—Advanced Composition..... | 2 | 2 | ..... |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 5 | 4 | 6 |
| JUNIOR YEAR. | | | |
| Public Speaking..... | 1 | 1 | 1 |
| Chemistry 108—Organic Chemistry..... | 3(3) | 3(3) | ..... |
| Zoology 108—Systematic Entomology..... | 2(6) | 2(6) | 2(6) |
| Botany 112—Systematic Botany..... | ..... | ..... | 1(6) |
| English 103—Technical Composition..... | 2 | 2 | 2 |
| Military Instruction 103..... | R | R | R |
| Elective..... | 7 | 7 | 8 |
| SENIOR YEAR. | | | |
| Bacteriology 101—General Bacteriology..... | 1(6) | 1(6) | 1(6) |
| Zoology 107—Economic Entomology..... | 3(6) | 3(6) | 3(6) |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 9 | 9 | 9 |

SUGGESTED ELECTIVES FOR STUDENTS MAJORING IN THE DIVISION OF PLANT INDUSTRY

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| SOPHOMORE YEAR. | | | |
| Animal Husbandry 101—General Animal Husbandry..... | 3(3) | ..... | ..... |
| Animal Husbandry 102—Live Stock Management..... | ..... | 2(3) | ..... |
| Animal Husbandry 103—Principles of Breeding..... | ..... | ..... | 2(3) |
| Drawing 107—Mechanical Drawing..... | (3) | ..... | ..... |
| Shop 104—Wood Work..... | ..... | (3) | ..... |
| Shop 107—Forging and Pipe Fitting..... | ..... | ..... | (3) |
| Physics 104—General Physics..... | 2(3) | 2(3) | 2(3) |
| Chemistry 103—Qualitative Analysis..... | 1(3) | ..... | ..... |
| Chemistry 104—Quantitative Analysis..... | 1(6) | 1(6) | ..... |
| Chemistry 105—Quantitative Analysis..... | ..... | 1(6) | 1(6) |
| Zoology 103—Entomology..... | ..... | ..... | 2(3) |
| Botany 111—Plant Ecology..... | ..... | ..... | 1(6) |
| Modern Language..... | 3 | 3 | 3 |
| Advanced Composition..... | 2 | 2 | 2 |
| Literature..... | 2 | 2 | 2 |
| Public Speaking..... | 1 | 1 | 1 |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Agronomy 102—Grain Judging..... | ..... | 3(3) | ..... |
| Pomology 101—Principles of Pomology..... | 3(3) | ..... | ..... |
| Floriculture and Landscape 101—Principles of Landscape Gardening..... | ..... | 3(3) | ..... |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | ..... | ..... | 3(3) |
| JUNIOR YEAR. | | | |
| Animal Husbandry 104—Animal Nutrition..... | ..... | 3(3) | ..... |
| Animal Husbandry 105—Stock Judging..... | ..... | ..... | 1(3) |
| Animal Husbandry 108 or 109—Production..... | ..... | 1(3) | ..... |
| Animal Husbandry 111—Anatomy and Physics..... | 3 | ..... | ..... |
| Animal Husbandry 113—Dairy Management..... | ..... | 2(3) | ..... |
| Animal Husbandry 114—Farm Dairying..... | ..... | ..... | 1(3) |
| Animal Husbandry 118—Farm Poultry..... | ..... | 3 | ..... |
| Animal Husbandry 119—Poultry Practice..... | ..... | ..... | (3) |
| Agronomy 103—Forage Crops..... | ..... | ..... | 3(3) |
| Agronomy 104—Crop Breeding..... | ..... | 2(3) | 1(3) |
| Agronomy 106—Marketing and Grading..... | ..... | 1(3) | ..... |
| Agronomy 108—Crop Rotation..... | 2 | ..... | ..... |
| Soils 104—Fertilizers..... | ..... | ..... | 2(3) |
| Botany 110—Genetics..... | ..... | 3 | ..... |
| Botany 112—Systematic Botany..... | ..... | ..... | 1(6) |
| Botany 105—Plant Pathology..... | 2(3) | ..... | ..... |
| Botany 106—Methods in Pathology..... | ..... | 2(3) | ..... |
| Botany 107—Diseases of Horticultural Plants..... | ..... | ..... | 2(3) |
| Botany 108—Diseases of Cereal and Forage Crops..... | ..... | ..... | 1(3) |
| Pomology 102—Commercial Pomology..... | 1(3) | ..... | ..... |
| Pomology 104—Practical Pomology..... | ..... | 2(3) | (6) |
| Pomology 103—Fruit Judging..... | (3) | (3) | ..... |
| Vegetable Gardening 108..... | ..... | 1(3) | 1(3) |
| Vegetable Gardening 102—Tuber and Root Crops..... | 2(3) | ..... | ..... |
| Landscape and Floriculture 102—Plant Materials..... | ..... | ..... | 2(3) |
| Landscape and Floriculture 115—Tree Repair..... | 1(6) | ..... | ..... |
| Landscape and Floriculture 112—Floral Decoration..... | ..... | (3) | ..... |
| Mathematics 101—Trigonometry..... | 5 | ..... | ..... |
| Mechanical Engineering 107—Farm Machinery..... | ..... | 3(3) | ..... |
| Surveying and Drainage..... | ..... | ..... | 4 |
| Chemistry 107—Agricultural Organic Chemistry..... | 2(3) | ..... | ..... |
| Chemistry 108—Organic Chemistry..... | ..... | 3(3) | 3(3) |
| Chemistry 109—Agricultural Chemistry..... | 3 | ..... | ..... |
| Chemistry 110—Agricultural Chemical Analysis..... | (6) | ..... | ..... |
| Chemistry 111—Physiological Chemistry..... | 3(3) | ..... | ..... |
| History and Government 102—Business Law..... | 2 | 2 | 2 |
| Modern Language..... | 3 | 3 | 3 |
| English—A..... | 2 | 2 | 2 |
| English—B..... | 2 | 2 | 2 |
| Oratory..... | 1 | 1 | 1 |

SUGGESTED ELECTIVES FOR STUDENTS MAJORING IN THE DIVISION OF PLANT INDUSTRY—Concluded

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| SENIOR YEAR. | | | |
| Animal Husbandry 106—Advanced Stock Judging..... | 1(3) | ..... | ..... |
| Animal Husbandry 109—Production..... | ..... | 1(3) | ..... |
| Animal Husbandry 112—Animal Diseases..... | ..... | 3(3) | ..... |
| Agronomy 107—Classification of Farm Crops..... | ..... | ..... | 1(3) |
| Bacteriology..... | 3(3) | ..... | ..... |
| Botany 116—Plant Micro-Chemistry..... | ..... | (6)1 | ..... |
| Hydraulics 110—Advanced Drainage..... | ..... | ..... | 1(3) |
| Landscape and Floriculture 103—Landscape Design..... | 2(3) | ..... | ..... |
| Landscape and Floriculture 106—Civic Art..... | 1(3) | ..... | ..... |
| Landscape and Floriculture 113—Garden Flowers..... | ..... | ..... | 2(3) |
| Mechanical Engineering 108—Advanced Farm Machinery..... | 1(3) | ..... | ..... |
| Mechanical Engineering 109—Gas Engines..... | ..... | 3(3) | ..... |
| Pomology 102—Commercial Pomology..... | 2(3) | ..... | ..... |
| Pomology 105—Small Fruit Culture..... | ..... | ..... | 2(3) |
| Pomology 106—Nut Culture, Citrus and Sub. Tropical Fruits..... | ..... | 2 | ..... |
| Pomology 107—Systematic Pomology..... | 1(6) | (6) | ..... |
| Pomology 108—Advanced Pomology..... | 1(6) | ..... | (6) |
| Pomology 109—Origin, Improvement and Breeding of Fruits..... | ..... | ..... | 2(3) |
| Soils 103..... | 1(6) | ..... | ..... |
| Structural Designing 109—Farm Buildings..... | 2 | ..... | ..... |
| Vegetable Gardening 105—Vegetable Forcing..... | 1(6) | 1(6) | ..... |
| Vegetable Gardening 106—Vegetable Forcing..... | ..... | ..... | (6) |
| Vegetable Gardening 110—Vegetable Growing for Canning..... | 2(3) | ..... | ..... |
| Vegetable Gardening 112—Advanced Vegetable Gardening..... | 3(3) | 3(3) | 3(3) |
| Zoology 111—Horticultural Entomology..... | ..... | ..... | 2(3) |
| Zoology 104—Insecticides and Their Application..... | ..... | 1(3) | ..... |
| Psychology..... | 3(3) | ..... | ..... |
| Modern Language—A..... | 3 | 3 | 3 |
| Modern Language—B..... | 5 | 5 | 5 |
| Public Speaking..... | 1 | 1 | 1 |
| English—A..... | 2 | 2 | 2 |
| English—B..... | 2 | 2 | 2 |

DESCRIPTION OF SUBJECTS OFFERED

Following are descriptions of the courses offered by the various departments in the Division of Plant Industry:

AGRONOMY

Introduction—The course in Agronomy is designed to acquaint the student with the fundamental principles in the production and utilization of field crops. The first two years include the usual scientific and cultural subjects of a College course, while the last two are devoted chiefly to the technical subjects. Students graduating from the course in Agronomy should be well fitted for general farming, investigational work in State or Federal Experiment Stations, or for county agent work.

Agro. 101: Cereal Crops—A study of the history, distribution, culture, uses and improvement of cereal crops. The laboratory work is devoted to studies of the plant and grain of the cereal crops with detailed descriptive study of the grain. Prereq. Bot. 101.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Agro. 102: Grain Judging—Practice in judging the cereal crops for milling, seeding and feeding purposes. Prereq. Agro. 101.

Practice, 3 hours; 2d term. Credit 1.

Agro. 103: Forage Crops—A study of the history, distribution, adaptation, culture and uses of forage and pasture crops. The laboratory periods are devoted to the identification and classification of plants and seeds of hay and pasture crops, purity and viability of the seeds, and physiological studies of the plants. Prereq. Bot. 101 and Soils 101.

Lectures, 3 hours; practice, 3 hours; 3d term. Credit 4.

Agro. 104: Crop Breeding—In this course the principles of breeding are applied to field crops and detailed studies made of methods used in crop improvement work. Prereq. Bot. 101-102; Genetics 110.

Lectures, 2 hours; practice, 3 hours, 2d term; practice, 3 hours, 3d term. Credit 4.

Agro. 105: Methods in Crop Investigations—This course deals with methods used by Experiment Stations in crop investigational work. The work of different stations on certain problems is classified with the view of the standardization of methods. Students are required to make reports on and criticize methods used by the different stations in attacking the problems studied. Prereq. Agro. 101-103; Soils 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Agro. 106: Marketing and Grading Farm Crops—A study of market classifications and grades as recommended by the United States Bureau of Markets. The students make a study of such documents as the Grain Standardization Act and Rules and Regulations pertaining thereto. Practice is given in the laboratory in grading of grains according to the latest standards and regulations. Prereq. Agro. 101-102-103.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

Agro. 107: Classification of Farm Crops—Botanical classification of crop plants. Prereq. Agro. 101-103.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Agro. 108: Crop Rotation—This course is designed to give the student a thorough knowledge of the principles and practice of crop rotation. Rotations used in this State and other States and the scientific principles involved are studied. Prereq. Agro. 101-103.

Lectures, 2 hours, 1st term. Credit 2.

Agro. 109: Seminar—The seminar is devoted largely to reports by students on current bulletins and scientific papers dealing with the problems in farm crops. Prereq. Agro. 104 and Soils 101-102.

Lecture, 1 hour, 2d term. Credit 1.

Agro. 110: Research and Thesis—Investigation in problems pertaining to farm crops. The work is carried on largely in laboratory, library and field, and the results written in thesis form.

Lectures and practice to fit needs; the year. Credit 6.

GRADUATE WORK

Agro. 201: Biometry—A study of statistical methods as applied to problems in Genetics and Plant Breeding. The methods used in the study of variations and correlations are discussed and the biometrical constants worked out by the class for certain assigned data.

First term. Credit 2.

Agro. 202: Crop Breeding—The content of this course is similar to the undergraduate course in Crop Breeding, but will be adapted more to graduate students and more of a range will be allowed in choice of material to suit special cases.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

Agro. 203: Research—With the approval of the head of the department, the student will be allowed to work on any problem in crops or he will be given a list of suggested problems from which he may make a selection.

Hours to be arranged to suit individual cases; the year. Credit 9.

TWO-YEAR AGRICULTURE

Agro. 1: Cereal Crops—A study of the history, distribution, adaptations, uses and culture of cereal crops, a larger part of the term being spent on corn and wheat.

Three lectures and 3 hours; practical work; 1st term.

Agro. 2: Forage Crops—A study of the history, distribution, adaptations, uses and culture of forage and cover crops adapted to Maryland conditions.

Lectures, 3 hours; practice, 3 hours; 3d term.

Agro. 3: Grain Judging—A laboratory course in judging grains from the standpoint of the grower, the feeder and the miller.

Practice, 2 hours, 2d term.

Agro. 4: Advanced Agronomy—Students specializing in Agronomy are given special work in judging and grading grains, crop improvement and various other phases of crop production. Students are allowed to elect subjects in other departments for part of the time.

Lectures, 2 hours; practice, 4 hours; 1st term. Lectures, 2 hours; practice, 3 hours; 2d term. Lectures, 3 hours; practice, 4 hours; 3d term.

SOILS

Introduction—The subject of soils is very closely allied to the subject of Agronomy, and for that reason the schedule of study is the same for both. Students majoring in the course should be well fitted for general farming or investigational work.

Soils 101: Introductory Study of Soils—The origin, classification, physical and chemical properties of soils in their relation to tillage and the maintenance of soils fertility. Field excursions are conducted for the purpose of studying soil formation and problems of drainage. The practical work consists mainly of experiments and demonstrations in soil physics.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

Soils 102: Soils—A continuation of 101-b.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Soils 103: Principles of Soil Management—A laboratory course dealing with special problems of soil management and soil analysis intended for students specializing in Agronomy. A special study is made of soils from the College Farm which have been subjected to different methods of cropping treatment. Prereq. Agro. 110-a-b and 101 and 103.

Lecture, 1 hour; practice, 6 hours; 2d term. Credit 3.

Soils 104: Fertilizers—The subject of fertilizers is developed logically from the needs of the plant and the condition of the soil to the selection of proper plant food for each crop under varying conditions of soils and climate. Some attention is given to the home-mixing of fertilizers. Prereq. Soils 101-b.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Soils 105: Advanced Soils—A study of the principal soil regions, series and types of the United States and especially of the soils of Maryland as to origin, formation and composition and value from the agricultural point of view. Prereq. Soils 101-b.

Lecture, 1 hour; practice, 6 hours; 1st term. Credit 3.

Soils 106: Methods in Soil Investigation—A study of methods used by Experiment Stations in soil problems and technique of laboratory methods. Prereq. Soils 101-102; Agro. 101-103.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Soils 107: Research and Thesis—Investigational work of problems pertaining to soils. The work is carried on largely in laboratory, library and field, and the results written in thesis form.

Lecture, 1 hour; practice, 3 hours; the year. Credit 6.

Soils 201: Advanced Soils—A survey of latest investigations in soils and fertilizers, conducted by means of lectures, references and practical work.

First term. Credit 3.

Soils 202: Research in Soils—Original investigation of problems in soils and fertilizers.

Lectures and practice to be arranged; the year. Credit 12.

Soils 1: General Soils—A study of the physical and chemical conditions of the soils in their relation to profitable agriculture.

Three lectures and 3 hours; practical work; 3d term.

Soils 2: Fertilizers—The selection of proper plant food for each crop under varying conditions of soil and climate. Special attention is given to the home-mixing of fertilizers.

Lectures, 2 hours; practice, 2 hours; 1st term.

VEGETABLE GARDENING

Introduction—The course in vegetable gardening is intended to prepare students for the following purposes: Commercial vegetable gardening on truck farms, market gardens or under glass; home vegetable gardening, investigational work, teaching and allied lines of work connected with growing, marketing and storage of horticultural products.

Veg. G. 101: Principles of Vegetable Gardening—This course includes a study of the different types of vegetable gardening, methods of propagation, construction and management of hotbeds and cold frames, growing early vegetable plants under glass and methods of planting, cultivating and harvesting under irrigation and in a large "Farmers' Garden."

Lectures, 3 hours; practice, 3 hours; 3d term. Credit 4.

Veg. G. 102: Tuber and Root Crops—A study of white potatoes and sweet potatoes, including considerations of seed, varieties, propagation, soils, fertilizing, planting, cultivating, spraying, harvesting, storing and marketing. Prereq. Veg. G. 101.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 3.

Veg. G. 103: Commercial Vegetable Gardening—The methods employed by truckers and market gardeners in commercial production, equipment, use of hotbeds and cold frames, field planting, rotation of crops and irrigation. Cultural directions for all vegetables are given, including their requirements, varieties, tillage, control of insects and diseases, grading, packing, storage and marketing. Each student plans and manages intensive cropping systems on small areas and under irrigation, and extensive planting on larger areas in a six-year rotation. Trips are taken to markets and vegetable farms, and the students work during the summer on commercial vegetable farms. Prereq. V. G. 1.

Lectures, 2 hours; practice, 6 hours; 2d, 3d and 1st terms. Credit 12.

Veg. G. 104: Commercial Vegetable Gardening—This course is arranged for students in other departments who wish to know something about the production of vegetables for commercial purposes. Cultural directions are given for the most important crops—harvesting, packing and marketing. The practical work includes the starting of early vegetable plants in frames, and practice in planning, planting and managing vegetable crops in the field.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Veg. G. 105: Vegetable Forcing—A course which treats of the principles and practice of forcing vegetables in greenhouses. All of the vegetables that are used for forcing are considered, including methods of starting the plants, systems of companion and successive croppings and their grading, packing and marketing. Each student is allotted a definite area and is required to plan, plant and manage it. Prereq. V. G. 101.

Lecture, 1 hour; practice, 6 hours; 1st and 2d terms. Credit 9.

Veg. G. 106: Vegetable Forcing—Students who desire to complete the entire forcing year in the greenhouses may elect this course. The work will include the planning, planting and managing the spring crops which are planted in the greenhouses. Prereq. V. G. 105.

Veg. G. 107: Frame Crops—The forcing of vegetables to maturity in hotbeds and cold frames, soil management, composting and sterilizing, use of permanent frames heated with manure, hot water and steam, the use of temporary frames for earlier planting of vegetables that will be cultivated as field crops. Prereq. V. G. 101.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Veg. G. 108: Home Vegetable Gardening—The production of vegetables for home use; the location, planning, fertilizing and management of the garden. The varieties to select, study of vegetable seeds, germination tests, growing early plants in hotbeds and cold frames and their care until they are planted outside in the "Farmers' Garden." Seed sowing, cultivation, harvesting and storing.

Lecture, 1 hour; practice, 3 hours; 2d and 3d terms. Credit 6.

Veg. G. 109: Vegetable Gardening for Teachers—A course designed to give methods in teaching vegetable gardening. Planning projects to meet different conditions. Equipment, study of seeds, germination tests, seed sowing, transplanting, potting, management of frames, use and care of tools in outside planting and cultivation. Selection of varieties, harvesting and storing.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Veg. G. 110: Vegetable Growing for Canning—A course dealing with the principal vegetables grown for commercial canning; cultural directions for these crops and the home canning of surplus products. Practical work in canning small amounts of vegetables in tin cans and glass jars. Prereq. V. G. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Veg. G. 111: Systematic Olericulture—This course includes a systematic and descriptive study of the leading varieties of the most important vegetables, their origin and botany; adaptation of the various varieties to the different cultural and market conditions; judging and exhibition work. Prereq. Veg. G. 102-103.

Lecture, 1 hour; practice, 6 hours; 1st term. Credit 3.

Veg. G. 112: Advanced Vegetable Gardening—Advanced students who are preparing for some special line of work may elect this course for the

purpose of studying the special problems concerned. This course may be elected any term up to four credits. Improving crop yields, seed selection, soil fertility problems, labor, marketing problems, business systems, experimental work and other subjects may be considered. All of the facilities of the department are available for students in this course. Prereq. Veg. G. 103-111.

Lectures, 2 hours; practice 6 hours; the year. Credit 12.

Veg. G. 113: Horticultural Seminar—Weekly meeting of faculty and senior students in vegetable gardening. Each one will present a paper on some horticultural subject, which will be followed by a general discussion. Attendance of juniors permitted and desired. Required, 2d term, 1 theoretical period per week.

Lecture, 1 hour; 1st and 3d terms. Credit 2.

Veg. G. 114: Research—Advanced students may elect this course for the purpose of studying some special subject on vegetable gardening or experiments with vegetables. The results are written in the form of a report to be filed in the department. Each student's work is arranged individually. All of the facilities of the department are available to such student. A student may elect any available subject desired in case the problem does not require all of the time.

Practice, 6 hours; the year. Credit 6.

GRADUATE SUBJECTS

Veg. G. 201: Advanced Vegetable Gardening—Lectures and practical work on the most important phases of gardening.

Lectures, 2 hours; practice, 3 hours. Credit 3.

Veg. G. 202: Research in Vegetable Gardening—Original investigation of problems in vegetable gardening as soils, culture, breeding, etc.

Practice, 12 hours; the year. Credit 12.

TWO-YEAR AGRICULTURE

Veg. G. 1: Home Vegetable Gardening—The general principles of vegetable gardening as applied to the growing of vegetables for home use. The laboratory work includes a study of vegetable seeds, seed testing, seed sowing, transplanting and the care of plants in the greenhouses and cold frames. The students are required to plan, plant and manage a large home garden until the end of the term.

Lecture, 1 hour; practice, 3 hours; 2d term. Lectures, 2 hours; practice, 3 hours; 3d term.

Veg. G. 2: Commercial Vegetable Gardening—A study of the principles of vegetable gardening as applied to the growing of vegetables for market and for canning. The course includes the construction and management of hotbeds and cold frames, growing early vegetable plants, soil preparation, sowing and planting, cultivation, harvesting, grading, packing, marketing, canning and storage. Each student is allotted a definite area and is required to plan, plant and manage it.

Lecture, 1 hour; practice, 3 hours; 1st term. Lectures, 2 hours; practice, 3 hours; 3d term.

Veg. G. 3: Vegetable Forcing—A course which deals with the principles and practice of forcing vegetables in greenhouses, hotbeds and cold frames. The most important forcing crops are considered. Each student is assigned a definite plot in the greenhouses and frames and is required to plan, plant and manage it. Second year.

Lecture, 1 hour; practice, 3 hours; 1st and 2d terms.

Veg. G. 4: Vegetable Growing for the Canning Industry—A course dealing with the principal vegetables grown for commercial canning, cultural directions for these crops and the home canning of surplus products. Practical work will consist in canning small amounts of vegetables in tin cans and glass jars. Second year.

Lectures, 2 hours; practice, 3 hours; 1st term.

Veg. G. 5: Advanced Vegetable Gardening—Students who elect to spend the entire time scheduled for horticulture in vegetable gardening will be given a course which includes the subjects considered under Courses 2 and 3, but the problems arising in the different phases of commercial vegetable growing will be treated in a more thorough manner. It also includes a systematic study of some of the more important commercial varieties. Trips will be taken to markets and vegetable farms.

Lectures, 3 hours; practice, 6 hours; 1st and 3d terms. Lectures, 2 hours; practice, 3 hours; 2d term.

POMOLOGY

Introduction—The course in Pomology is planned to meet the needs of students who want to take up practical Pomology or teach or carry on investigational work. The theoretical instruction is supplemented by excursions to field and orchards for practical work.

COURSES OFFERED

Pom. 101: Principles of Pomology—This is an introductory course which deals with the principles of fruit growing and covers the methods of propagation, planting and pruning.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Pom. 102: Commercial Pomology—In this course the harvesting, grading, packing, storing and marketing of fruits are taken up. The preparation of orchard by-products, such as cider and vinegar, making dried, canned and preserved fruits are considered. The department is equipped with a cider mill and canning and drying outfits, and students will be given practical exercises in the preparation of these products. Prereq. Pom. 101.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

Pom. 103: Fruit Judging—In this course the student is given practical exercises in judging fruit, identifying fruits and in selecting fruits for exhibition purposes. The standards and principles governing the judging of fruits are applied.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Pom. 104: Practical Pomology—Managing commercial orchards; a study of orchard sites, soils, planting plans, cultivation, cover crops, companion crops, fertilizers, pruning and spraying as practical in commercial orchards. Prereq. Pom. 101.

Lectures, 2 hours; practice, 3 hours; 2d term. Practice, 6 hours; 3d term. Credit 5.

Pom. 105: Small Fruit Culture—Cultural methods for the production of strawberries, grapes and bunch fruits for market and for the home.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Pom. 106: Nut Culture and Citrus and Sub-tropical Fruits—This course is designed to cover these subjects in a general way. Prereq. Pom. 101.

Lectures, 2 hours; 2d term. Credit 2.

Pom. 107: Systematic Pomology—This course embraces a study of the evolution and relation of pomological plants. It includes exercises in describing and identifying the leading commercial varieties.

Practice, 6 hours; 1st and 3d terms. Credit 4.

Pom. 108: Advanced Pomology—Special problems in adaptation, propagation, cultivation, pruning, harvesting and marketing as they arise in commercial orchards and nurseries will be discussed. The origin and development of the various fruit-producing sections and industries will also be considered and a study made of the men interested and the methods which they use. In this course it may be necessary at times for the student to visit orchards in other sections of the State. Prereq. Pom. 105.

Practice, 6 hours; 1st and 3d terms. Credit 4.

Pom. 109: Origin, Improvement and Breeding of Fruits—The discussion of the methods in plant improvement are accompanied by practice in the orchard, greenhouse and garden. Prereq. Bot. 110.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Pom. 110: Research and Thesis—The work will be arranged with each student individually. He may select some topic or problem in which he may be specially interested and which will require some independent investigation. The results to be presented in the form of a thesis.

Practice, 6 hours; the year. Credit 6.

FOR GRADUATES ONLY

Research—Special problems in Pomology. Work may be based upon compilation and analysis of available data or upon new data acquired by research or experiment. Credits and hours to be arranged.

TWO-YEAR AGRICULTURE

Pom 1: Elementary Pomology—An introductory course dealing with the principles of the subject. It is intended for all students in the two-year course and it is prerequisite to the later courses. First year.

Lectures, 2 hours; practice, 3 hours; 1st term.

Pom. 2: Practical Fruit Growing—This course is designed for those students who desire to devote all their allotted time in horticulture to pomology. The entire field will be covered and the subjects treated in all the other courses in pomology will be included herein so far as the allotted time and the capacity of the student will permit.

Lectures, 3 hours; practice, 6 hours; 1st and 2d terms. Lectures, 2 hours; practice, 3 hours; 3d term.

Pom. 3: Commercial Pomology—In this course the methods of gathering, packing and marketing of the various fruits are taken up. Market problems, transportation and shipping associations receive special attention. Advantage is taken of the materials available at this time to study the classification and identification of the leading commercial varieties of apples. The student is also given practical exercises in fruit judging and the selection of fruits for exhibition purposes.

Lectures, 2 hours; practice, 3 hours; 1st term.

Pom. 4: Practical Fruit Growing—This course is a continuation of course Pom. 1 and deals with orchard sites, soils, varieties, companion crops, fertilizers and pruning as practiced in both commercial and home orchards.

Lecture, 1 hour; practice, 3 hours; 2d term.

Pom. 5: Small Fruits—In this course the production of strawberries, bush fruits and grapes is considered. The methods of propagation, selection of sites, soils, pruning, training and cultivation are discussed. Second year.

Lectures, 2 hours; practice, 3 hours; 3d term.

LANDSCAPE GARDENING AND FLORICULTURE

L. & F. 101: Principles of Landscape Gardening—A study of types, methods and principles underlying Landscape Gardening.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

L. & F. 102: Plant Materials—A study in field and laboratory of trees, shrubs and herbaceous plants. Plants are studied in respect to their values, characters, habits, soil requirements and arrangement and planting design. Prereq. Bot. 112.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 103: Landscape Design—The composition of gardens, private estates and related problems. This study involves the topographical survey, drainage and grading plans. Prereq. engineering, —; drawing, —, and surveying, —.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

L. & F. 104: Landscape Design—Continuation of L. & F. 103, including more complex problems and a study of public parks and playgrounds. Attention is given to planting plans and designs. Prereq. L. & F. 103-a.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

L. & F. 105: Landscape Practice—Grading plans, construction, drawing, estimates, specifications and contracts. Prereq.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

L. & F. 106: Civic Art—A general study of the methods of city planning and their application to village and rural improvement.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

L. & F. 107: History of Landscape Gardening—A reference course dealing with the literature and different stages of the development of the art.

Practice, 3 hours; 2d term. Credit 1.

L. & F. 108: Floriculture: Greenhouse Management—Preparation of soils, potting, watering, ventilating and fumigating as applied to greenhouse crops.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

L. & F. 109: Commercial Floriculture—Greenhouse plants and flowers, their culture and methods of handling and marketing for wholesale and retail markets. Trips are taken to leading growers in this section of the country.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

L. & F. 110: Commercial Floriculture—Continuation of course 109.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 111: Greenhouse Construction—A study of types of forcing structures, their location, arrangement and construction, cost, methods of heating and ventilation. The work includes drawing plans, specifications and practical working construction. Prereq. drawing, —.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

L. & F. 112: Floral Decoration—A study of plants and cut flowers and their arrangement in baskets, designs, bouquets, table and house decoration.

Practice, 3 hours; 2d term. Credit 1.

L. & F. 113: Garden Flowers—The growing of annuals, bulbous plants, and herbaceous perennials for home gardens and for cut flowers and ornamental planting.

Lecture, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 114: Amateur Floriculture—Plants and flowers for window and home gardens; soils, fertilizers, containers, and potting and shifting of plants.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

L. & F. 115: Tree Repair—Methods of treating trees and shrubs to control attacks of insects and fungous enemies and the repair of injuries done by these enemies. Some attention is given to the technical details.

of pruning, placing, treatment of wounds and cavity filling. Prereq. Plant Pathology—, Entomology—.

Lectures, 1 hour; practice, 6 hours; 1st term. Credit 3.

L. & F. 116: Thesis—A typewritten report upon some subject or problem in landscape gardening.

Practice, 3 hours; the year. Credit 3.

TWO-YEAR AGRICULTURE

L. & F. 1: Plant Propagation—A study of the propagation of the plant by means of seedage, layering, cuttings, buds and grafts. Special attention is given to ornamental planting for home decoration.

Lecture, 1 hour; practice, 2 hours; 2d term.

L. & F. 2: Floriculture—A study of the various phases of greenhouse management, including preparation of soils, watering, potting and ventilating. Elective.

Lecture, 2 hours; practice, 3 hours; 1st term.

L. & F. 3: Principles of Landscape Gardening—A study of the various styles of landscape gardening and the principles which underlie them. Special application is made to the ornamentation of the home grounds. Elective.

Lecture, 2 hours; practice, 3 hours; 1st term.

L. & F. 4: Commercial Floral Crops—Methods of growing and marketing plants and cut flowers for wholesale and retail markets.

Lecture, 1 hour; practice, 2 hours; 2d term.

Lecture, 2 hours; practice, 2 hours; 3d term.

FORESTRY

Introduction—Instruction in Forestry is planned to give the student who is fitting himself to take up practical problems in farm management a sufficient knowledge of the principles of Forestry to enable him to apply to the wood lot or timber tract the same degree of intelligent direction which he has prepared to give to the tilled lands. At the present time Forestry is not offered as a major course, but is used to supplement the content of the other courses.

101: Farm Forestry—A study of forest botany, wood management, measurements, fire protection, nursery practice, tree planting, valuation and utilization of forest crops. The work is conducted by means of lectures and field work. It may be elected by any student having the necessary prerequisites. Prerequisites Botany, 101-2-3.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

1: Farm Forestry—The content of this course is similar to that of 101, but is adapted to the development and needs of students in the two-year agricultural course.

Lectures, 2 hours; practice, 3 hours; 3d term.

ECONOMIC BOTANY

Introduction—The purpose of the department is to supply students in Agriculture and General Science with such information as is thought fundamental to their special subjects, and to train students specializing in the department in the different phases of Botany. This training includes such knowledge of plants as would fit one for various positions; such as teachers in high schools, normal schools, colleges and investigators in Experiment Stations and Government service.

Bot. 101: General Botany—A general introduction to Botany. It touches briefly on all the phases of Botany and is prerequisite to all other subjects offered in the department.

Lectures, 2 hours; practice, 6 hours; 3d term. Credit 4.

Bot. 102: Plant Histology—An anatomical study of leaves, stems, roots, flowers and fruits. Where possible plants of economic value are used as type specimens. Prereq. Bot. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Bot. 103: Plant Physiology—A summary view of the physiological processes and behavior of seed plants. The plant is studied in relation to soil, water requirements and other physical processes. Prereq. Bot. 101.

Lectures, 2 hours; practice, 6 hours; 2d term. Credit 4.

Bot. 104: Plant Physiology—Continuation of 103-b; devoted to the study of metabolism, growth and movement. This term is devoted to the study of photosynthesis, synthesis of fat and proteins, respiration, fermentation, digestion, growth and movement. Prereq. Bot. 101.

Lectures, 2 hours; practice, 6 hours; 3d term. Credit 4.

Bot. 105: General Plant Pathology—An introductory study of the disease of plants. Especial attention is given symptoms and to microscopic study of the parasites causing diseases. As far as possible choice of material includes representatives of the principal orders of parasitic fungi. Prereq. Bot. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Bot. 106: Methods in Pathology—A study of methods of sterilization, preparation of culture media, and cultural methods as applied to different groups of parasitic organisms. Some work is done in killing and fixing material, staining and mounting, inoculation and determination of species. Prereq. Path. 105.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

Bot. 107: Diseases of Horticultural Plants—A detailed study of diseases of fruits, vegetables and other horticultural plants. Especial attention

is given to causes, symptoms, effects and methods of control. Prereq. Path. 105.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 2.

Bot. 108: Diseases of Cereal and Forage Crops—A detailed study of selected types of diseases of cereal and forage crops. The study is from the point of view of distribution, economic importance, symptoms, and effects, causes and methods of control. Prereq. Path. 105.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Bot. 110: Genetics—A study of heredity. A review is given of the phenomena of evolution and a study made of variation, hybridisation and experimental data. This subject of genetics is fundamental to any advanced study of breeding. Prereq. Bot. 101.

Lectures, 3 hours; 2d term. Credit 3.

Bot. 111: Plant Ecology—A study of plants in relation to their environments. Plant formations and successions in various parts of the country are briefly treated. Much of the work, especially the practical, must be carried on in the field, and for this purpose type regions adjacent to the college are selected. It is generally necessary to take three or four trips at some distance from the college, in which case Saturdays are used for that purpose. Prereq. Bot. 101.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Bot. 112: Systematic Botany—A study of the local flora. A study is made of floral parts and the essential relations between the groups of flowering plants. Students become familiar with the systematic key used to identify plants. Prereq. Bot. 101.

Lecture, 1 hour; practice, 6 hours; 3d term. Credit 3.

Bot. 113: Plant Morphology—A course designed to give the student a comprehensive view of the Plant Kingdom. It treats of the general morphological evolutionary development and relationships of the various groups of plants, based upon the examination of selected types from each group. Prereq. Bot. 103.

Lecture, 1 hour; practice, 6 hours; 2d term. Credit 3.

Bot. 114: Methods in Plant Histology—Primarily a study in technique. It includes methods of killing, fixing, imbedding, sectioning, staining and mounting on slides of plant materials. Prereq. Bot. 101.

Practice, 6 hours; 1st term. Credit 2.

Bot. 115: Seminar in Botany—Conferences and reports on Botanical literature, special problems and research. Prereq. Bot. 103.

Lecture and special topics, 1 hour. Credit 1.

Bot. 116: Plant Micro-Chemistry—Micro-technical methods applied to the identification of organic and inorganic substances found in the plant tissues. Prereq. Bot. 103.

Lecture, 1 hour; practice, 6 hours; 2d term. Credit 3.

Bot. 117: Research and Thesis—Original investigation of some project, the results of which are written up in thesis form. This subject is

offered for advanced students of Botany. Hours are arranged to fit individual cases.

Practice, 9 hours; the year. Credit 9.

GRADUATE SUBJECTS

Bot. 201: Advanced Plant Physiology—A detailed study of physiological processes where special problems are discussed from all points of view. Lectures and laboratories to fit the individual cases.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Bot. 202: Research in Plant Physiology—Original investigation of projects relative to physiology of plants.

Practice, 12 hours; the year. Credit 4.

Bot. 203: Plant Pathology—An advanced study of causal agents, symptoms, diagnosis and treatment of diseases.

Lectures, 2 hours; practice, 6 hours; the year. Credit 4.

Bot. 204: Research in Plant Pathology—Original investigation of special problems.

Practice, 12 hours; the year. Credit 4.

Bot. 205: Special Morphology—A study of the four great groups of plants as related to their Morphological development.

Lecture, 1 hour; practice, 6 hours; the year. Credit 3.

Bot. 206: Research in Morphology—Original investigation of some problem relating to structural development.

Practice, 12 hours; the year. Credit 4.

TWO-YEAR AGRICULTURE

Bot. 1: General Botany—A survey of the field of Botany. Effort is made to give the student an understanding of how plants take up water and nutrients from the soil, how they manufacture foods, and the structures necessary to carry on these processes.

Lectures, 2 hours; practice, 2 hours; 1st term.

Bot. 2: Plant Diseases—A practical study of diseases of plants to enable the student to recognize them in the field. A course in sprays and spraying is given in co-operation with the Zoology Department in which the student is taught methods of disease control.

Lectures, 2 hours; practice, 2 hours; 1st term.

ECONOMIC ZOOLOGY

Introduction—The department aims to give a broad training in general Zoology and, at present, to prepare specialists only in entomology. There are special advantages for students in entomology, since the State and Station work is conducted through this department.

The course fully meets the requirements outlined for entrance by the leading medical colleges.

New courses have been outlined and will be offered in the near future; for specialization in apiculture, parasitology and agriculture; and in evolution and zoological theory, social life of insects, ecology and animal behavior.

Zoo. 101: General Zoology—The relationships of animals, their general form and structure, their responses to environing conditions and their development and evolution are discussed in a broad manner. One example of each branch of the animal kingdom is studied in the laboratories.

Lectures, 2 hours; practice, 6 hours; 1st and 2d terms. Credit 8.

Zoo. 102: Histology and Embryology—A study of the normal tissues, chiefly of the mammals, covers the ground usually assigned to general Histology. The course in Embryology is based on the chick and pig. Prereq. Zoo. 101.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Zoo. 103: Entomology—General principles of structural, systematic and economic Entomology. Lectures, recitations, laboratory work and field excursions. A collection of representative economic insects is required, together with a general collection properly arranged to orders. Prereq. Zoo. 101.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

Zoo. 104: Insecticides and Their Application—The principles of insecticides, their chemistry, preparation and application, including construction, care and use of spray and dusting machinery, fumigation and mechanical controls.

Lectures, 1 hour; practice, 3 hours; 2d term. Credit 2.

Zoo. 105: Parasitology—A course offered especially for animal husbandry men to include lectures and laboratory work on the principal ectozoic and entozoic parasites of domestic animals. Prereq. Zoo. 101.

Lectures, 2 hours; practice, 3 hours; 1st term. Credit 3.

Zoo. 106: Economic Entomology—Morphology of type of insects to acquaint the student with special structures bearing on insect control, insect biology, including methods. The theory and practice of insect control. Prereq. Zoo. 103.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Zoo. 107: Economic Entomology—Problems in Economic Entomology, including life history, ecology, distribution, parasitism and control. Prereq. Zoo. 106.

Lectures, 3 hours; practice, 6 hours; the year. Credit 15.

Zoo. 108: Systematic Entomology—A fundamental study of the morphology of various types of insects and a consideration of the characters of the various orders, their division into tribes, families, etc. Prereq. Zoo. 103.

Lectures, 2 hours; practice, 6 hours; the year. Credit 12.

Zoo. 109: Advanced Systematic Entomology—The student selects some group in which he is particularly interested and makes a detailed study of it. The course requires considerable field work and is supplemented by laboratory periods and frequent conferences. Prereq. Zoo. 108.

Practice, 6 hours; 1st term. Credit 2.

Zoo. 110: Scientific Delineation and Preparations—Photography, photomicrography, drawing freehand and with camera lucida, lantern-slides making, optical projection, preparation of exhibit and museum material.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Zoo. 111: Horticultural Entomology—Lectures, laboratory and field work on the morphology, biology and control of insect pests of horticultural crops. Prereq. 104.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

GRADUATE STUDIES

Zoo. 201: Investigations in Entomology—Studies of minor problems in morphology, taxonomy and applied entomology under the direction of a member of the staff, with particular reference to preparation for individual research.

Credit according to work done.

Zoo. 202: Research in Entomology—Advanced students having sufficient preparation may, with the approval of the head of the department, undertake individual research in morphology, taxonomy or biology and control of insects. Frequently the student may be allowed to work on Station or State Horticultural Department projects. The students' work may form a part of the final report on the project and be published in bulletin form.

Credit according to work done.

Zoo. 203: Advanced Economic Entomology—Lectures discussing the latest theories and practices in applied Entomology.

Lectures, 2 hours; 2d term. Credit 2.

TWO-YEAR AGRICULTURE

Zoo. 1: Animal Pests—A study of crop and Animal Pests with practice in identification; designed to enable the farmer to recognize and intelligently combat them.

Lectures, 2 hours; practice, 2 hours; 2d term.

Zoo. 2: Sprays and Spraying—Preparation and application of insecticides, together with a consideration of other methods of control.

Lectures, 2 hours; practice, 2 hours; 3d term.

Zoo. 3: Beekeeping—Consideration of the underlying principles of successful Beekeeping with practice in preparation of equipment and the manipulation of bees.

Practice, 3 hours; 3d term.

EQUIPMENT AND FACILITIES FOR INSTRUCTION

The nearness of the College to Washington and the United States Department of Agriculture and the Congressional Library gives it advantages that the other agricultural colleges lack.

Instructors of the Division of Plant Industry frequently take their classes to the Government farm at Arlington and other places of interest in and about the United States Department.

Graduate students are permitted, where satisfactory arrangement can be made, to do their investigational work in the United States Department under the supervision of the proper College authorities.

The departments of Agronomy, Soils and Botany have quarters in the new Agricultural Building, which is to be equipped with the most modern classroom and laboratory facilities.

The Department of Agronomy recently installed modern apparatus for grading and testing grains, and students wishing to equip themselves for this new line of work will have an opportunity to do so.

The Department of Botany is prepared to give undergraduate and graduate instruction in all phases of the subject. Special emphasis is placed upon plant physiology and diseases of economic plants.

The Department of Zoology has its laboratories well supplied with collections of insects, models, microscopes and other supplies necessary for practical work in zoology and entomology. A greenhouse with an aquarium and a screen insectary adjacent to the laboratories are used for class and investigational work. Since the State and Experiment Station entomological work is conducted through the College department, it has special advantages for students in applied entomology.

All departments of the division have greenhouses for experimental and demonstration purposes. The Horticultural Department has at its disposal 10 greenhouses that are 50 feet by 20 feet and of the latest model. Adjacent to these is a 10-acre patch of land for orchards and gardens. The laboratories are

equipped with tools necessary for practical work. With these facilities the department offers instruction to students desiring to specialize in any phase of pomology, vegetable gardening, landscape gardening or floriculture.

The Experiment Station, being on the same campus with the College, offers a field of observation in farm practice, experimental plots, greenhouses and orchards for students interested in plant industry.

An exhibit of field crops and horticultural products will be held every autumn. All students bringing material from their home farms are permitted to exhibit it for prizes.

Division of Animal Industry

OFFICERS OF INSTRUCTION

- R. C. REED.....Dean of Division of Animal Industry and Professor of Animal Pathology.
- W. T. L. TALIAFERRO....Professor of Farm Management and Director of Short Winter Courses.
- R. H. RUFFNER.....Professor of Animal Husbandry.
- J. A. GAMBLE.....Professor of Dairy Husbandry.
- A. R. WARD.....Professor of Bacteriology and Pathologist of the Biological Laboratory.

INTRODUCTION

The object of the work in Animal Husbandry is to give instruction in all lines of work which pertain to the judging, breeding, selecting, development and improving the various breeds, types and classes of domesticated animals. The course in Animal Husbandry is offered to students who wish to become proficient in those branches of animal or dairy husbandry which relate to the breeding of pure-bred and high-grade stock. Attention is given to the production, handling, marketing and manufacturing of high-class dairy products. The students are always given such instruction as to enable them: (1) To secure positions in the various lines of work which demand young men well trained in animal husbandry and dairying; (2) to conduct their own farming operations with pleasure and profit.

OUTLINE OF COURSES OFFERED

The required and elective work of the various departments of the division is outlined on the following pages. The College reserves the right to withdraw any course at any time:

ANIMAL HUSBANDRY

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | 3(3) |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Freshman Lectures..... | 1 | 1 | 1 |
| Industrial History, or Mathematics, or Language..... | 4 | 4 | 4 |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Animal Husbandry 101—General Animal Husbandry..... | 3(3) | ..... | ..... |
| Animal Husbandry 102—Live Stock Management..... | ..... | 2(3) | ..... |
| Animal Husbandry 103—Principles of Breeding..... | ..... | ..... | 2(3) |
| Chemistry 102—Qualitative Analysis..... | 1(6) | ..... | ..... |
| Chemistry 103—Quantitative Analysis..... | ..... | 1(6) | 1(6) |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Soils 101—Introductory Study..... | ..... | 3(3) | ..... |
| Geology 102—General Geology..... | ..... | ..... | 4 |
| Botany 102—Plant Histology..... | 2(3) | ..... | ..... |
| Botany 103—Elementary Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 104—Elementary Plant Physiology..... | ..... | ..... | 2(6) |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Elective..... | 3 | 3 | 3 |
| JUNIOR YEAR. | | | |
| Animal Husbandry 104—Animal Nutrition..... | ..... | 3(3) | ..... |
| Animal Husbandry 105—Stock Judging..... | ..... | ..... | 1(3) |
| Animal Husbandry 111—Anatomy and Physiology..... | 3 | ..... | ..... |
| Bacteriology 101—General Bacteriology..... | 1(6) | 1(6) | 1(6) |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| Soils 102—Continuation of 101..... | 2(3) | ..... | ..... |
| Agronomy 103—Forage Crops..... | ..... | ..... | 3(3) |
| English 13—Technical Composition..... | 2 | 2 | 2 |
| Military Instruction 103—Advanced Course..... | R | R | R |
| Elective..... | 3 | 5 | 6 |
| SENIOR YEAR. | | | |
| Animal Husbandry 106—Advanced Stock Judging..... | 1(3) | ..... | ..... |
| Animal Husbandry 112—Animal Diseases..... | ..... | 3(3) | ..... |
| Animal Husbandry 118—Farm Poultry..... | ..... | 3 | ..... |
| Rural Economics 107—Farm Management..... | ..... | 3(3) | 3(3) |
| Animal Husbandry 120—Research and Thesis..... | (6) | (6) | (6) |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Elective..... | 13 | 4 | 11 |
| ELECTIVES OFFERED IN ANIMAL HUSBANDRY. | | | |
| Animal Husbandry 107—Horse and Mule Production..... | 1(3) | ..... | ..... |
| Animal Husbandry 108—Beef Production..... | ..... | 1(3) | ..... |
| Animal Husbandry 109—Hog Production..... | ..... | 1(3) | ..... |
| Animal Husbandry 110—Sheep Production..... | ..... | ..... | 1(3) |
| Animal Husbandry 113—Dairy Management..... | ..... | 2(3) | ..... |
| Animal Husbandry 114—Farm Dairying..... | ..... | ..... | 1(3) |
| Animal Husbandry 115—Market Milk..... | ..... | 1(3) | ..... |
| Animal Husbandry 116—Milk Products..... | ..... | ..... | 1(3) |
| Animal Husbandry 119—Poultry Practice..... | ..... | ..... | (3) |
| Animal Husbandry 117—Advanced Milk Hygiene..... | (6) | ..... | ..... |

DESCRIPTION OF SUBJECTS OFFERED

Following are descriptions of the courses offered by the various departments in the Division of Animal Industry:

ANIMAL HUSBANDRY

A. H. 101: General Animal Husbandry—Types and breeds of live stock. Judging and estimating the weight and age of farm animals. Practical methods of using the score card.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

A. H. 102: Livestock Management—Feeding, housing and general management of farm live stock. Methods of keeping records of production and feeding, testing milk for butter-fat and the organization of testing associations.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

A. H. 103: Principles of Breeding—A treatment of the principles and practices involved in the improvement of the domestic animals. The course includes the subjects of heredity, selection and development.

Lectures, 2 hours; practice, 3 hours; 3d term. Credit 3.

A. H. 104: Animal Nutrition—Principles of nutrition, composition and comparative value of feeding stuffs, balance rations, study of standards and practical problems.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

A. H. 105: Stock Judging—The course consists of lectures and practice on the animal form and character, giving special attention to market classes of live stock. Illustrations are used to indicate quality, vigor, capacity for profitable production of milk, meat, wool, work and speed.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 106: Advanced Stock Judging—A continuation of A. H. 105. The major portion of the work is done by the method of comparative judging, similar to County and State fair work.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

A. H. 107: Horse and Mule Production—A discussion of the successful practical methods of breeding, handling and training horses and mules. Feeding and care of work horses, fattening horses, carriage and saddle horses, brood mares, foals and stallions. A careful study is made of the cost of raising horses. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

A. H. 108: Beef Production—Breeding, feeding, care and management of beef cattle. A study of successful practice in feeding for market and fitting for show. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

A. H. 109: Hog Production—Types and breeds of swine, principles of swine breeding, results of experiments in swine feeding and management, marketing and curing, buildings, sanitation and the prevention of diseases. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

A. H. 110: Sheep Production—Types and breeds of sheep, principles of sheep breeding, results of experiments in sheep feeding, shelter, rearing for mutton and wool; production of winter or hothouse lambs; care and management of the farm flock. Prereq. A. H. 101-2-3.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 111: Anatomy and Physiology—Study of the structure and functions of the animal.

Lectures, 3 hours; 1st term. Credit 3.

A. H. 112: Animal Diseases—Study of diseases of domestic animals with special reference to the recognition of disease conditions, hygiene and sanitation.

Lectures, 3 hours; practice, 3 hours; 2d term. Credit 4.

A. H. 113: Dairy Management—This course is devoted to a study of the care, management and feeding of the dairy herd; selection and care of the herd bull; raising calves and heifers; improvement of the herd through breeding and feeding operations; pedigrees; keeping herd records and the practical applications of methods for the production of clean milk. Prereq. A. H. 101-2-3.

Lectures, 2 hours; practice, 3 hours; 2d term. Credit 3.

A. H. 114: Farm Dairying—Care and handling of milk and cream on the farm, centrifugal separation, pasteurization and testing of milk and milk products.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 115: Market Milk—Importance of clean milk to consumer and producer; sources of milk contamination; how to produce clean milk; scoring methods of production; treatment after milking; methods of cooling; transportation of milk; pasteurization of milk and cream; standardization milk and cream; grading of milk and cream; care of milk in the home. Prereq. General Bacteriology.

Lecture, 1 hour; practice, 3 hours; 2d term. Credit 2.

A. H. 116: Milk Products—This course takes up a study of the manufacture of frozen products, neufchatel and cottage cheese, the preparation and marketing of fermented milk drinks; preparation and use of starters; butter making; determination of the total solids in milk and the percentage of fat in ice-cream, evaporated milk and condensed milk by means of the lactometer and the Babcock machine. Prereq. A. H. 101-2-4; General Bacteriology.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

A. H. 117: Advanced Milk Hygiene—Methods and standards for the production and distribution of certified milk. Prereq. General Bacteriology.

Practice, 6 hours; 1st term. Credit 2.

A. H. 118: Farm Poultry—Care of poultry on the general farm; breeds of poultry; selection of stock; principles of poultry-house construction; poultry feeds and feeding; breeding, management of laying and breeding

stock; natural and artificial incubation; keeping of poultry records. Prereq. A. H. 101-2-3.

Lectures, 3 hours; 2d term. Credit 3.

A. H. 119: Poultry Practice—Poultry-house construction; fattening, killing, dressing, marketing poultry; each student taking this course is required to operate an incubator and brooder. Keeping accurate records and submitting detailed reports. Prereq. A. H. 101-2-3-18.

Practice, 3 hours; 3d term. Credit 1.

A. H. 120: Research and Thesis—The lines of work and subjects to be investigated are to be arranged with the head of the department. The object of this work is to develop independence and originality in the student, and also to give him a taste for personal investigation upon lines which are of particular interest to himself. The results of these investigations are usually incorporated in a thesis.

Practice, 6 hours; the year. Credit 6.

A. H. 1: Breeds and Judging of Live Stock—The student begins with the breeds of live stock, making a thorough study of their development and characteristics and also of the pedigrees and performances of superior individuals among horses, cattle, sheep and swine. The practical part of the course is devoted to the judging of horses, dairy cattle, beef cattle, sheep and swine.

Lectures, 2 hours; practice, 2 hours; 1st term.

A. H. 2: Dairying—This course takes up a study of the care and handling of milk and cream on the farm, centrifugal separation, pasteurization and the testing of milk and milk products.

Lectures, 2 hours; practice, 2 hours; 3d term.

A. H. 3: Feeds and Feeding—This course embraces the principles and practice of animal feeding. After covering the principles of feeding it takes up the composition of feeding stuffs, their combinations into properly balanced rations and the relation between the sustenance of animals and their products. Problems relating to balanced rations are solved.

Lectures, 2 hours; practice, 2 hours; 1st term.

A. H. 4: Breeding of Animals—The main object of this course is to direct attention and to stimulate interest in the more tangible physical basis of heredity. A scientific study of the physical aspects of heredity leads to conclusions which fully accord with the teachings of the work of our master breeders. It is the aim to limit discussion to points upon which scientific opinion is quite well agreed.

Lectures, 2 hours; practice, 2 hours; 2d term.

A. H. 5: Animal Diseases—A briefer course in Animal Diseases is offered to the students in the Two-Year Agricultural Course.

Lectures, 2 hours; practice, 2 hours; 2d term.

A. H. 6: Farm Poultry—A general course dealing with poultry-house construction, yarding, fattening, killing, dressing and marketing, and a brief description of the more common breeds. Demonstrations are given in the practices of handling poultry.

Lectures, 2 hours; practice, 3 hours; 3d term.

A. H. 7: Animal Industry—A study of the successful methods of operating farms devoted chiefly to livestock production and of the systems to be applied to Maryland conditions. The student may arrange with the head of the department to utilize one-half of scheduled time in other departments. Elective.

Lectures, 2 hours; practice, 4 hours; 1st term. Lectures, 2 hours; practice, 3 hours; 2d term. Lectures, 3 hours; practice, 4 hours; 3d term.

ANIMAL HUSBANDRY

Equipment and Facilities for Instruction

The Division of Animal Husbandry is equipped with a new stock-judging pavilion and modern rooms for the preparation of market milk, milk-testing laboratory, creamery manufactures, offices and classrooms.

Good herds of stock are being established at the Experiment Station, which are of use to the student in his studies. In addition to the supply of stock on the farm, the proximity of the College to Washington and Baltimore makes it possible for the student to get excellent material for study.

It is evident that there is but one way to make a young man a proficient judge of live stock, and that is by training the eye. In all of the lecture and laboratory work outlined in the courses the work is demonstrated with living specimens.

Junior and senior students taking this course are sent to farms throughout the State of Maryland to supervise advanced registry tests for the dairy associations. These trips give the students the advantage of observing the most up-to-date farms in the country, in addition to practical experience. Each year a judging team consisting of three students participates in the students' contest in judging dairy cattle at the National Dairy Show. Students in any of the agricultural courses are eligible to compete for a place on this team. The selection of students for the team is based upon ability and efficiency in this line of work.

Students desiring to specialize in any line of live stock are allowed to do so, and animals are furnished for the special purpose whenever possible. Berkshire, Duroc-Jersey, Tamworth and large Yorkshire breeds of swine are maintained.

Division of Engineering

OFFICERS OF INSTRUCTION

- T. H. TALIAFERRO.....Dean, Professor of Mathematics and Civil Engineering.
- H. GWINNERProfessor of Mechanical Engineering and Drawing.
- MYRON CREESE.....Professor of Electrical Engineering and Physics.
- H. C. BYRD.....Director of Athletics and Chief of Division of Publications.
- JOHN PITCHER.....Professor of Military Science and Tactics.
- W. A. GRIFFITH.....Physician, Lecturer on Hygiene.
- *G. P. SPRINGER.....Associate Professor of Civil Engineering.
- J. M. SMITH.....Assistant Professor of Civil Engineering.
- L. J. HODGINS.....Assistant Professor of Electrical Engineering and Physics.
- J. T. SPANN.....Assistant Professor of Mathematics.
- *W. W. SMELKER.....Instructor in Farm Machinery.
- C. T. McCURDY.....Instructor in Mechanical Engineering.

* Leave of absence for war work.

INTRODUCTION

For administrative purposes the engineering group includes, in addition to the departments of Civil, Electrical and Mechanical Engineering, the departments of Mathematics, Physics, Physical Training and Military Science and Tactics.

Courses leading to the degree of Bachelor of Science are offered in Civil, Electrical and Mechanical and Rural Engineering, respectively. An outline of each is found on the succeeding pages. The four-year courses are arranged with a view to preparing the student for immediate usefulness in the technical world. The fundamental principles are emphasized through lectures, recitations and practical exercises in the laboratory, drafting room, shop and field. The courses allow some latitude in the selection of subjects in the senior year, but in the main they are fixed in character, since experience indicates that

the faculty is better qualified to select the subjects to be studied than the average undergraduate. The curriculums include studies which provide a broad general culture as well as a good foundation for technical engineering. Emphasis is placed on the necessity for the development of self-reliance, honest and accurate methods of work, and good judgment in addition to mastering the scientific laws underlying the profession of engineering and applying them.

Instruction

The division is organized, first, to instruct the students who desire to practice engineering as a profession, and, second, to teach students interested in agriculture and applied science, such branches of mechanic arts and engineering as will promote their individual interests. Instruction in certain subjects required under the provision of the Smith-Hughes Act for the training of teachers in the industrial arts will be given. An opportunity is afforded each year for practicing road engineers to take an intensive course in road building and maintenance, and for persons attending the short courses in agriculture to obtain instruction in farm machinery, wood work, the mixing and placing of concrete, etc.

The work in the departments of Mathematics and Physics is developed with a view both to its cultural and its utilitarian value. The utilitarian point of view is probably more emphasized because scientific training is so largely dependent on these subjects, particularly mathematics. Their value, however, in mental training and in general culture is clearly presented to the students.

A general statement regarding military instruction is given elsewhere. An outline of subjects assigned to the Department of Military Science and Tactics, under provisions of the act establishing the Reserve Officers' Training Corps, is placed with those given by the other departments of the division.

At present no courses are offered in the Department of Physical Training. A statement regarding that work will be found elsewhere.

SUMMER WORK AND INSPECTION

In addition to the work given during the regular session, summer work covering 100 hours of field, laboratory, shop or office practice is required of members of the freshman class. This work will be developed to include also a specified amount of time at the close of the sophomore and junior years. Summer employment will be accepted as a substitute for this work, if found to be equivalent.

The proximity of the College to Baltimore and Washington and to other places where there are great industrial enterprises offers an excellent opportunity for engineering students to observe what is being done in their chosen field. An instructor accompanies students on all trips of inspection.

Information and advice is given to farmers and others interested concerning drainage, sanitation, water supply, lighting, farm machinery and other small engineering problems whenever possible, although neither an Experiment Station nor an Extension Department in Engineering has as yet been established.

OUTLINE OF COURSES OFFERED

The normal curriculum of each four-year course is outlined on the following pages. Since the state of war now existing may give rise to conditions which will necessitate a modification of these courses, the right is reserved to change any outline at any time:

CIVIL ENGINEERING

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| Mathematics 101—Trigonometry..... | 5 | ..... | ..... |
| Mathematics 102—Analytics..... | ..... | 5 | 5 |
| English 101—Composition and Rhetoric..... | 3(1) | 3(1) | 3(1) |
| Public Speaking 101..... | (2) | (2) | (2) |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Surveying 101 and 102—Plane Surveying..... | ..... | 2 | (3) |
| Drawing 101—Freehand Drawing..... | (3) | ..... | ..... |
| Drawing 103—Mechanical Drawing..... | (6) | (3) | ..... |
| Drawing 104—Engineering Drawing..... | ..... | (3) | ..... |
| Drawing 105—Descriptive Geometry..... | ..... | ..... | 2(3) |
| Shop 113—Wood Work..... | (3) | ..... | ..... |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |

SOPHOMORE YEAR.

| | | | |
|--|-------|-------|-------|
| Mathematics 103—Advanced Algebra..... | 3 | ..... | ..... |
| Mathematics 104—Calculus..... | 2 | 5 | 5 |
| Physics 101 and 104—Mechanics and Sound..... | 4(3) | ..... | ..... |
| Physics 102 and 105—Electricity and Magnetism..... | ..... | 4(3) | ..... |
| Physics 103 and 106—Heat and Light..... | ..... | ..... | 4(3) |
| Mineralogy 101—Determinative Mineralogy..... | ..... | ..... | 1(3) |
| Surveying 103 and 104—Plane Surveying..... | 2(3) | ..... | ..... |
| Surveying 105 and 106—Advanced Surveying..... | ..... | 4 | (3) |
| Mechanics 101—Graphic Statics..... | ..... | 2(3) | ..... |
| Mechanics 102—Analytical Mechanics..... | ..... | ..... | 3 |
| Drawing 102—Descriptive Geometry..... | 2(6) | ..... | ..... |
| Drawing 108—Drafting..... | ..... | ..... | (3) |
| Military Instructions 102—Basic Course..... | 1(2) | 1(2) | 1(2) |

JUNIOR YEAR.

| | | | |
|--|-------|-------|-------|
| English 104—Technical Composition..... | (2) | (2) | (2) |
| Public Speaking 104—Technical Public Speaking..... | (1) | (1) | (1) |
| Rural Economics 101—Principles of Economics..... | 3 | 3 | ..... |
| Government 104—Law of Contracts..... | ..... | ..... | 3 |
| Geology 103—Engineering Geology..... | 3(3) | ..... | ..... |
| Surveying 107—Topographic Surveying..... | (3) | ..... | ..... |
| Railways 101 and 102—Railway Curves and Earth Work..... | ..... | 3 | 2 |
| Railways 103—Railway Surveying..... | ..... | ..... | (6) |
| Mechanics 103 and 104—Mechanics of Engineering..... | 5 | 2 | 2 |
| Mechanics 105—Materials of Construction..... | ..... | 2 | ..... |
| Hydraulics 101..... | ..... | ..... | 3 |
| Drawing 109, 110 and 111—Shades, Shadows and Perspective..... | ..... | 1(3) | (3) |
| Structural Designing 101—Elementary Structural Design..... | ..... | 2(3) | 2(3) |
| Electrical Engineering 111—Dynamios and Motors..... | 2 | ..... | ..... |
| Electrical Laboratory 102—Electrical Engineering Laboratory..... | (3) | ..... | ..... |
| Experimental Laboratory 101—Testing..... | ..... | (3) | ..... |
| Military Instructions 103—Advanced Course..... | S | S | S |

CIVIL ENGINEERING—Concluded

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| SENIOR YEAR. | | | |
| Mathematics 107—Differential Equations..... | | 3† | ..... |
| Mathematics 108—Estimates of Cost..... | (3) | ..... | ..... |
| English 105—Technical Composition..... | (2) | (2) | (2) |
| Public Speaking 106—Technical Public Speaking..... | (1) | (1) | (1) |
| French 104..... | 5* | 5* | 5* |
| German 104..... | 5* | 5* | 5* |
| Spanish 102..... | 5* | 5* | 5* |
| Surveying 108 and 109—Geodesy..... | | 3† | (3)† |
| Railways 104—Railway Economics..... | | 2 | ..... |
| Railways 101—Highways..... | | | 4 |
| Highways 102—Materials Laboratory..... | | | (3)† |
| Hudraulics 102..... | (3) |  | ..... |
| Hydraulics 103—Hydromechanics..... | 3 |  | ..... |
| Hydraulics 104 and 105—Water Supply..... | | 3† | (3)† |
| Hydraulics 106 and 107—Sewerage..... | | | 2(3)† |
| Structural Designing 102—Structural Design..... | 2(3) | 2(3) | 2(3) |
| Structural Designing 104 and 105—Concrete Theory and Design..... | 2 | 2 | ..... |
| Structural Designing 106—Retaining Walls and Concrete Arches..... | | (3) | ..... |
| Mechanical Engineering 106—Heating and Ventilation..... | | | 2(3)† |
| Experimental Laboratory 103—Cement Testing..... | (3) |  | ..... |
| Military Instruction 104—Advanced Course..... | S | S | S |

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

MECHANICAL ENGINEERING

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| Mathematics 101—Trigonometry | 5 | ..... | ..... |
| Mathematics 102—Analytics ..... | ..... | 5 | 5 |
| English 101—Composition and Rhetoric | 3(1) | 3(1) | 3(1) |
| Public Speaking 101 | (2) | (2) | (2) |
| Chemistry 101—General Chemistry | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis ..... | ..... | ..... | 2(6) |
| Drawing 101—Freehand Drawing ..... | ..... | (3) | ..... |
| Drawing 103—Mechanical Drawing | (6) | (3) | ..... |
| Drawing 105—Descriptive Geometry ..... | ..... | ..... | 2(3) |
| Mechanical Engineering 101—Technical Instruction | 2 | ..... | ..... |
| Shop 101—Wood Work | (3) | (6) | (3) |
| Military Instruction 101—Basic Course | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Mathematics 103—Advanced Algebra | 3 | ..... | ..... |
| Mathematics 104—Calculus | 2 | 5 | 5 |
| Physics 101 and 104—Mechanics and Sound | 4(3) | ..... | ..... |
| Physics 102 and 105—Electricity and Magnetism ..... | ..... | 4(3) | ..... |
| Physics 103 and 106—Heat and Light ..... | ..... | ..... | 4(3) |
| Mechanics 101—Graphic Statics ..... | ..... | 2(3) | ..... |
| Mechanics 102—Analytical Mechanics ..... | ..... | ..... | 3 |
| Drawing 106—Descriptive Geometry | 2(6) | ..... | ..... |
| Drawing 108—Drafting ..... | ..... | ..... | (3) |
| Mechanical Engineering 102—Steam Engines | 3 | ..... | ..... |
| Mechanical Engineering 103—Technical Mechanics ..... | ..... | 2 | ..... |
| Shop 105—Blacksmithing ..... | ..... | (6) | ..... |
| Shop 108—Foundry ..... | ..... | ..... | (6) |
| Shop 109—Machine Work ..... | ..... | ..... | (3) |
| Military Instruction 102—Basic Course | 1(2) | 1(2) | 1(2) |
| JUNIOR YEAR. | | | |
| English 104—Technical Composition | (2) | (2) | (2) |
| Public Speaking 104—Technical Public Speaking | (1) | (1) | (1) |
| Rural Economics 101—Principles of Economics | 3 | 3 | ..... |
| Government 104—Law of Contracts ..... | ..... | ..... | 3 |
| Mechanics 103 and 104—Mechanics of Engineering | 5 | 2 | 2 |
| Mechanics 105—Materials of Construction ..... | ..... | 2 | ..... |
| Hydraulics 101 ..... | ..... | ..... | 3 |
| Electrical Engineering 111 and 112—Dynamios and Motors | 2 | 2 | ..... |
| Electrical Laboratory 102 and 103—Electrical Engineering Laboratory | (3) | (3) | ..... |
| Machine Design 101—Elementary Machine Design | 1(3) | ..... | ..... |
| Machine Design 102 and 103—Machine Design ..... | ..... | 2(3) | 2(3) |
| Machine Design 104—Kinematics of Machinery ..... | ..... | ..... | 2(3) |
| Shop 110—Machine Work | (9) | (6) | ..... |
| Experimental Laboratory 101—Testing ..... | ..... | (3) | ..... |
| Experimental Laboratory 102—Experimental Engineering ..... | ..... | ..... | (3) |
| Military Instruction 103—Advanced Course | S | S | S |
| SENIOR YEAR. | | | |
| Mathematics 107—Differential Equations ..... | ..... | 3 | ..... |
| English 105—Technical Composition | (2) | (2) | (2) |
| Public Speaking 106—Technical Public Speaking | (1) | (1) | (1) |
| French 104 | 5* | 5* | 5* |
| German 104 | 5* | 5* | 5* |
| Spanish 102 | 5* | 5* | 5* |
| Hydraulics 103—Hydromechanics | 3 | ..... | ..... |
| Hydraulics 104—Water Supply ..... | ..... | 3† | ..... |
| Structural Design 103 | 2(6) | 2(3) | 2(6) |
| Mechanical Engineering 104 and 105—Heat Engineering | 2 | 3 | 3 |
| Mechanical Engineering 106—Heating and Ventilation ..... | ..... | ..... | 2(3) |
| Experimental Laboratory 103—Cement Testing | (3) | ..... | ..... |
| Experimental Laboratory 104—Experimental Engineering | (3) | (6) | (3) |
| Military Instruction 104—Advanced Course | S | S | S |

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students

ELECTRICAL ENGINEERING

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| Mathematics 101—Trigonometry | 5 | ..... | ..... |
| Mathematics 102—Analytics ..... | ..... | 5 | 5 |
| English 101—Composition and Rhetoric | 3(1) | 3(1) | 3(1) |
| Public Speaking 101 | (2) | (2) | (2) |
| Chemistry 101—General Chemistry | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis ..... | ..... | ..... | 2(6) |
| Surveying 101 and 102—Plane Surveying ..... | ..... | 2 | (3) |
| Drawing 101—Freehand Drawing | (3) | ..... | ..... |
| Drawing 103—Mechanical Drawing | (6) | (3) | ..... |
| Drawing 105—Descriptive Geometry ..... | ..... | ..... | 2(3) |
| Shop 113—Wood Work | (3) | (3) | ..... |
| Military Instruction 101—Basic Course | 1(2) | 1(2) | 1(2) |

SOPHOMORE YEAR.

| | | | |
|---|-------|-------|-------|
| Mathematics 103—Advanced Algebra | 3 | ..... | ..... |
| Mathematics 104—Calculus | 2 | 5 | 5 |
| Physics 101 and 104—Mechanics and Sound | 4(3) | ..... | ..... |
| Physics 102 and 105—Electricity and Magnetism ..... | ..... | 4(3) | ..... |
| Physics 103 and 106—Heat and Light ..... | ..... | ..... | 4(3) |
| Mechanics 101—Graphic Statics ..... | ..... | 2(3) | ..... |
| Mechanics 102—Analytical Mechanics ..... | ..... | ..... | 3 |
| Drawing 106—Descriptive Geometry | 2(6) | ..... | ..... |
| Drawing 108—Drafting ..... | ..... | ..... | (3) |
| Electrical Engineering 101—Electricity and Magnetism ..... | ..... | 2 | 2 |
| Electrical Laboratory 101—Electrical Engineering Laboratory ..... | ..... | (3) | (3) |
| Mechanical Engineering 102—Steam Engines | 3 | ..... | ..... |
| Shop 106—Blacksmithing ..... | ..... | (3) | ..... |
| Military Instruction 102—Basic Course | 1(2) | 1(2) | 1(2) |

JUNIOR YEAR.

| | | | |
|--|-------|-------|-------|
| English 104—Technical Composition | (2) | (2) | (2) |
| Public Speaking 104—Technical Public Speaking | (1) | (1) | (1) |
| Rural Economics 101—Principles of Economics | 3 | 3 | ..... |
| Government 104—Law of Contracts ..... | ..... | ..... | 3 |
| Mechanics 103—Mechanics of Engineering | 5 | ..... | ..... |
| Hydraulics 101 ..... | ..... | ..... | 3 |
| Electrical Engineering 102—Direct Current Theory | 3 | 3 | ..... |
| Electrical Engineering 103—Dynamoes and Alternating Currents ..... | ..... | ..... | 3 |
| Electrical Engineering 108—Wireless Telegraphy ..... | ..... | 1 | ..... |
| Electrical Engineering 110—Primary and Secondary Batteries ..... | ..... | 2 | ..... |
| Electrical Design 101—Direct Current Design ..... | ..... | ..... | 2(9) |
| Electrical Laboratory 104—Electrical Engineering Laboratory | (6) | (3) | (6) |
| Electrical Laboratory 107—Wireless Laboratory ..... | ..... | (3) | ..... |
| Machine Design 101—Elementary Machine Design | 1(3) | ..... | ..... |
| Machine Design 102 ..... | ..... | 2(3) | ..... |
| Shop 111—Machine Work | (3) | (3) | ..... |
| Experimental Laboratory 101—Testing ..... | ..... | (3) | ..... |
| Military Instruction 103—Advanced Course | S | S | S |

ELECTRICAL ENGINEERING—Concluded

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| SENIOR YEAR. | | | |
| English 105—Technical Composition..... | (2) | (2) | (2) |
| Public Speaking 106—Technical Public Speaking..... | (1) | (1) | (1) |
| French 104..... | 5* | 5* | 5* |
| German 104..... | 5* | 5* | 5* |
| Spanish 102..... | 5* | 5* | 5* |
| Hydraulics 103—Hydromechanics..... | 3 | ..... | ..... |
| Electrical Engineering 104—Alternating Currents..... | 3 | 3 | 3 |
| Electrical Engineering 105—Lighting and Illumination..... | ..... | ..... | 3 |
| Electrical Engineering 106—Electric Power Plants..... | ..... | 3 | ..... |
| Electrical Engineering 107—Telephones and Telegraphs..... | ..... | 2 | ..... |
| Electrical Engineering 109—Electric Railways..... | ..... | ..... | 3 |
| Electrical Design 102—Alternating Current Design..... | (3) | ..... | ..... |
| Electrical Laboratory..... | (6) | (6) | (6) |
| Electrical Laboratory 106—Telephone Laboratory..... | ..... | (3) | ..... |
| Mechanical Engineering 104—Heat Engineering..... | 2 | ..... | ..... |
| Military Instruction 104—Advanced Course..... | S | S | S |

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

RURAL ENGINEERING

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| Mathematics 101—Trigonometry | 5 | ..... | ..... |
| Mathematics 102—Analytics ..... | ..... | 5 | 5 |
| English 101—Composition and Rhetoric | 3(1) | 3(1) | 3(1) |
| Public Speaking 101 | (2) | (2) | (2) |
| Chemistry 101—General Chemistry | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis ..... | ..... | ..... | 2(6) |
| Surveying 101 and 102—Plane Surveying ..... | ..... | 2 | (3) |
| Drawing 101—Freehand Drawing | (3) | ..... | ..... |
| Drawing 103—Mechanical Drawing | (3) | (3) | ..... |
| Drawing 104—Engineering Drawing | (3) | ..... | ..... |
| Drawing 105—Descriptive Geometry ..... | ..... | ..... | 2(3) |
| Shop 102—Wood Work | (3) | (3) | ..... |
| Military Instruction 101—Basic Course | 1(2) | 1(2) | 1(2) |

SOPHOMORE YEAR.

| | | | |
|---|-------|-------|-------|
| Mathematics 103—Advanced Algebra | 3 | ..... | ..... |
| Mathematics 104—Calculus | 2 | 5 | 5 |
| Physics 101 and 104—Mechanics and Sound | 4(3) | ..... | ..... |
| Physics 102 and 105—Electricity and Magnetism ..... | ..... | 4(3) | ..... |
| Physics 103 and 106—Heat and Light ..... | ..... | ..... | 4(3) |
| Surveying 103 and 104—Plane Surveying | 2(3) | ..... | ..... |
| Mechanics 101—Graphic Statics ..... | ..... | 2(3) | ..... |
| Mechanics 102—Analytical Mechanics ..... | ..... | ..... | 3 |
| Drawing 106—Descriptive Geometry | 2(6) | ..... | ..... |
| Drawing 108—Drafting ..... | ..... | ..... | 3 |
| Electrical Engineering 101—Electricity and Magnetism ..... | ..... | 2 | 2 |
| Electrical Laboratory 101—Electrical Engineering Laboratory ..... | ..... | (3) | (3) |
| Shop 106—Blacksmithing ..... | ..... | (3) | ..... |
| Military Instruction 102—Basic Course | 1(2) | 1(2) | 1(2) |

JUNIOR YEAR.

| | | | |
|---|-------|-------|-------|
| English 104—Technical Composition | (2) | (2) | (2) |
| Public Speaking 104—Technical Public Speaking | (1) | (1) | (1) |
| Rural Economics 101—Principles of Economics | 3 | 3 | ..... |
| Government 104—Law of Contracts ..... | ..... | ..... | 3 |
| Agronomy 101—Cereal Crops | 3(3) | ..... | ..... |
| Soils 101—Introductory Soils ..... | ..... | 3(3) | ..... |
| Vegetable Gardening 101—Vegetable Gardening ..... | ..... | ..... | 3(3) |
| Mechanics 102—Mechanics of Engineering | 5 | ..... | ..... |
| Hydraulics 101 ..... | ..... | ..... | 3 |
| Structural Design 101—Elementary Structural Design ..... | ..... | 2(3) | 2(3) |
| Electrical Engineering 105—Lighting and Illumination ..... | ..... | ..... | 3 |
| Electrical Laboratory 102—Electrical Engineering Laboratory | (3) | ..... | ..... |
| Machine Design 101—Elementary Machine Design | 1(3) | ..... | ..... |
| Mechanical Engineering 107—Farm Machinery ..... | ..... | 3(3) | ..... |
| Shop 111—Machine Work | (3) | (3) | ..... |
| Experimental Laboratory 101—Testing ..... | ..... | (3) | ..... |
| Military Instruction 103—Advanced Course | S | S | S |

RURAL ENGINEERING—Concluded

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| SENIOR YEAR. | | | |
| Mathematics 108—Estimates of Cost..... | (3) | ..... | ..... |
| English 105—Technical Composition..... | (2) | (2) | (2) |
| Public Speaking 106—Technical Public Speaking..... | (1) | (1) | (1) |
| French 104..... | 5* | 5* | 5* |
| German 104..... | 5* | 5* | 5* |
| Spanish 102..... | 5* | 5* | 5* |
| Soils 102..... | 2(3)† | ..... | ..... |
| Forestry 101—Farm Forestry..... | ..... | ..... | 2(3) |
| Animal Husbandry 101—General Animal Husbandry..... | 3(3) | ..... | ..... |
| Animal Husbandry 114—Farm Dairying..... | ..... | ..... | 1(3)† |
| Animal Husbandry 118—Poultry..... | ..... | 3† | ..... |
| Geology 103..... | ..... | ..... | 3(3)† |
| Highways 101..... | ..... | ..... | 4† |
| Hydraulics 102..... | (3) | ..... | ..... |
| Hydraulics 103—Hydromechanics..... | 3† | ..... | ..... |
| Hydraulics 104 and 105—Water Supply..... | ..... | 3† | (3)† |
| Hydraulics 106 and 107—Sewerage..... | ..... | ..... | 2(3)† |
| Hydraulics 110—Advanced Drainage..... | ..... | ..... | 1(3)† |
| Structural Design 103—Concrete Theory..... | 2 | ..... | ..... |
| Structural Design 104—Concrete Design..... | ..... | 2† | ..... |
| Structural Design 105—Retaining Walls and Concrete Arches..... | ..... | (3)† | ..... |
| Structural Design 107—Design of Farm Structures..... | ..... | 2(3)† | 2(3)† |
| Structural Design 108—School Architecture..... | ..... | ..... | 3(3)† |
| Electrical Engineering 107—Telephones and Telegraphs..... | ..... | 2† | ..... |
| Electrical Engineering 110—Primary and Secondary Batteries..... | ..... | 2 | ..... |
| Electrical Laboratory 106—Telephone Laboratory..... | ..... | (3)† | ..... |
| Machine Design 105—Design of Farm Machinery..... | ..... | 2(3)† | 2(3)† |
| Mechanical Engineering 102—Steam Engines..... | 3† | ..... | ..... |
| Mechanical Engineering 106—Heating and Ventilation..... | ..... | ..... | 2(3) |
| Military Instruction 104—Advanced Course..... | S | S | S |

*Alternative.

†Electives to be selected with the approval of the Dean to supply the necessary credits.

S. Students who volunteer and are selected for this course are required to take 3 hours' training in theory in addition to the 2 hours of practical drill required of all physically fit male students.

DESCRIPTION OF SUBJECTS OFFERED

The subjects offered in the different departments of the division are divided into groups, each of which is given a title more or less indicative of the subjects included in it. An abbreviation of this title is placed before each subject in the group. This is used with the subject title in the tabulated outline of the curriculum of each course.

DRAWING AND DESCRIPTIVE GEOMETRY

Dr. 101: Freehand Drawing—Elementary practice; lettering, exercises in sketching, both in pencil outline and pencil rendering; line drawing, composition, proportion and comparative measurements; exercises in sketching of technical objects, and pen and ink shading. Plates upon

completion are bound and properly titled. Required of students in engineering.

Practice, 3 hours; 1st or 2d term. Credit 1.

Dr. 102: Mechanical Drawing—Practice in plain lettering, use of instruments, projection and simple working drawings, the plates upon completion being enclosed in covers properly titled by the students. Required of students in mechanical and rural engineering.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Dr. 103: Mechanical Drawing—A course similar to Dr. 102 for students in civil and electrical engineering.

Practice, 6 hours, 1st term; 3 hours, 2d term. Credit 3.

Dr. 104: Engineering Drawing—Conventional signs used in mapping. Scale making, contours, hachures. Profiles and mapping. Required of students in civil and rural engineering.

Practice, 3 hours; 1st or 2d term. Credit 1.

Dr. 105: Descriptive Geometry—Detailing of machinery and drawing to scale from blueprints. Tracing and blueprinting, and representation of flat and round surfaces by ink shading. Its relation to mechanical drawing and the solution of such problems relating to magnitudes in space as bear directly upon those which present themselves to civil, electrical, mechanical and rural engineers. Prerequisites Dr. 102 and Solid Geometry.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

Dr. 106: Descriptive Geometry—A continuation of Dr. 105.

Lectures and recitations, 2 hours; practice, 6 hours; 1st term. Credit 3.

Dr. 107: Mechanical Drawing—Practice in plain lettering, use of instruments, geometrical constructions and plans of simple buildings. Elective for non-engineering students.

Practice, 3 hours; 1st term. Credit 1.

Dr. 108: Drafting—In this course problems pertinent to the work of students in each branch of engineering are selected. Drawings are made to scale. Empirical formulas for determining dimensions are used whenever possible. Prereq. Dr. 102 and 103.

Practice, 3 hours; 3d term. Credit 1.

Dr. 109: Shades, Shadows, Perspective—Theory of shadows and perspective of objects, and of shadows in perspective. Prereq. Dr. 106. Must be taken with Dr. 110. Required of students in civil engineering.

Lectures and recitations, 1 hour; 2d term. Credit 1.

Dr. 110: Shades and Shadows—Development and application of Dr. 109 in the drawing room. Prereq. Dr. 106. Must be taken with Dr. 109. Required of students in civil engineering.

Practice, 3 hours; 2d term. Credit 1.

Dr. 111: Perspective—Perspective of point, line and solid. Shadows in perspective. Prereq. Dr. 109 and 110. Required of students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Dr. 1: Farm Drawing—A course similar to Dr. 107, for students in the Two-Year Course in Agriculture.

Practice, 3 hours; 1st term.

Dr. 2: Mechanical Drawing—Instruction in commercial drafting. This is preceded by a study of drafting instruments and freehand lettering. Projection applied to shop drafting of machine parts. Tracing and blue-printing. The making of detail and assembly drawings. Freehand sketching of machine tools.

Practice, 6 hours; 1st, 2d and 3d terms.

Dr. 3: Freehand Drawing—A course similar to Dr. 101.

Practice, 6 hours; 3d term.

ELECTRICAL ENGINEERING

E. E. 101: Electricity and Magnetism—The elementary theories of electrical and magnetic phenomena are carefully developed, the course being correlated with the technical work taken up later. Required of students in electrical and rural engineering. Must be taken with El. Lab. 101.

Lectures and recitations, 2 hours; 2d and 3d terms. Credit 4.

E. E. 102: Direct Current Theory—The study of the principles involved in the construction and operation of direct and alternating current generators and motors. Also the characteristic curves and efficiencies of the various types of machines, the selection of machines for specific duties and the proper methods of installing and operating. Required of students in electrical engineering. Must be taken with El. Lab. 104.

Lectures and recitations, 3 hours; 1st and 2d terms. Credit 6.

E. E. 103: Dynamos and Alternating Currents—This is a continuation of E. E. 102, which covers the characteristics of direct current machinery. A number of analytical and graphical problems are required to give a clear conception of the effects of inductance and capacity in alternating current circuits. Required of students in electrical engineering. Must be taken with El. Lab. 104.

Lectures and recitations, 3 hours; 3d term. Credit 3.

E. E. 104: Alternating Currents and Alternating Current Machinery—The theory, construction and practical applications of single phase and polyphase alternating current machinery, including generators, synchronous, induction, and repulsion motors, converters, transformers, etc., are taken up in detail. Required of students in electrical engineering. Must be taken with El. Lab. 105.

Lectures and recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

E. E. 105: Lighting and Illumination—A study of the various systems of distribution used in arc and incandescent lighting. Lectures on the manufacture and characteristics of the many forms of electric lamps; the selection of lamps for commercial work; and the principles of correct interior and exterior illumination. Required of students in electrical and rural engineering.

Lectures and recitations, 3 hours; 3d term. Credit 3.

E. E. 106: Electric Power Plants and Transmission—This course includes the principles governing the installation and operation of power-house and substation machinery and systems. A number of practical problems are given to illustrate the principles. Required of students in electrical engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

E. E. 107: Telephones and Telegraphs—The application of electricity to telephones and telegraphs, with a study of the construction and operation of the apparatus required for the magneto, common battery and automatic exchanges. The principles of the operation of simple, duplex, quadruplex and simultaneous telegraph. Required of electrical and elective for rural engineering students. Must be taken with El. Lab. 106.

Lectures and recitations, 2 hours; 2d term. Credit 2.

E. E. 108: Wireless Telegraphy—The principles of the application of electric waves to wireless telephony are followed by a study of the various systems in commercial use. Required of students in electrical engineering. Must be taken with El. Lab. 107.

Lectures and recitations, 1 hour; 2d term. Credit 1.

E. E. 109: Electric Railways—The course includes the consideration of the design and operation of the electric railway systems, power-plants and substations. Many problems are given which involve the engineering features of modern railway development. Required of students in electrical engineering.

Lectures and recitations, 3 hours; 3d term. Credit 3.

E. E. 110: Primary and Secondary Batteries—A study of the various types of primary batteries and their application to commercial work. The theory, construction and application of lead storage cells and Edison storage batteries. A short outline of the auxiliary apparatus used in connection with storage cells. Required of students in electrical and rural engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

E. E. 111: Dynamos and Motors—A general course in direct and alternating currents, covering the principles of construction and operation of machines used in commercial practice. Required of civil and mechanical engineering students. Must be taken with El. Lab. 102.

Lectures and recitations, 2 hours; 1st term. Credit 2.

E. E. 112: Dynamos and Motors—A continuation of E. E. 111. Required of mechanical engineering students. Must be taken with El. Lab. 103.

Lectures and recitations, 2 hours; 2d term. Credit 2.

E. E. 1: Elements of Direct Current Machinery—The study of the fundamental principles involved in the construction and operation of direct current generators and motors. Characteristic curves and the selection of machines for specific purposes. Methods for installing and maintaining various types of generators and motors. The laboratory includes the installation of generators and motors with the necessary auxiliary ap-

paratus, and commercial tests of the various types of direct current machines.

Recitations, 2 hours; practice, 3 hours; 1st and 2d terms.

E. E. 2: Elements of Direct Current Machinery—A course similar to E. E. 1.

Recitations, 3 hours; practice, 3 hours; 2d term.

E. E. 3: Elements of Alternating Current Machinery—This course includes the study of fundamental principles and the design and construction of alternating machinery. The laboratory work consists of commercial tests of single phase and polyphase machinery, including generators, motors, converters, transformers, etc.

Recitations, 4 hours; practice, 3 hours; 3d term.

E. E. 4: Illumination—Lectures on the manufacture and characteristics of the various forms of arc and incandescent lamps; the selection of lamps and reflectors for commercial work; the principles for correct interior and exterior illumination. The laboratory work includes the determination of the operating characteristics, the measuring of the candle-power of lamps, and the measurement of the efficiency of actual lighting installations.

Recitations, 2 hours; practice, 3 hours; 2d term.

E. E. 5: Electric Power Plants and Transmission—The principles governing the installation and operation of power-house and substation machinery, transmission and distribution systems.

Recitations, 2 hours; 2d and 3d terms.

E. E. 6: Telephones and Telegraphs—A study of the construction and operation of the apparatus required for magneto, common battery and automatic exchange. The principles of the operation of simple, duplex and quadruplex telegraphy. The laboratory work includes experiments with the various types of apparatus and the operation of exchanges.

Recitations, 3 hours; practice, 3 hours; 3d term.

E. E. 7: Primary and Secondary Batteries—The study and testing of various types of primary batteries and their application to commercial work. The theory and construction of lead storage cells and Edison storage batteries. Actual testing of batteries in operation.

Recitations, 2 hours; practice, 3 hours; 1st term.

E. E. 8: Electrical Measuring Instruments—The theory governing the design, construction and application of all types of direct and alternating current instruments. The repairing, testing and calibration of the different types of instruments.

Recitations, 2 hours; practice, 3 hours; 1st term.

E. E. 9: Electrical Equipment Repairs—This course includes the rewinding of armature and field coils, testing of commutators, repairs for signal systems, etc.

Recitation, 1 hour; practice, 3 hours; 2d term.

E. E. 10: Switchboards—Lectures on the design and construction of standard switchboards of various types.

Recitations, 2 hours; 3d term.

E. E. 11: Interior Wiring—A thorough study of the Underwriters' Rules concerning all classes of interior wiring. Calculations for circuits and the design of interior light and power systems. The practice includes the installation of residence and commercial light and power systems.

Recitations, 2 hours, 1st and 2d terms; practice, 6 hours, 1st term, 3 hours, 2d term.

E. E. 12: Outside Line Construction—The design and construction of short transmission and distribution systems.

Recitation, 1 hour; practice, 6 hours; 3d term.

ELECTRICAL ENGINEERING DESIGN

E. Des. 101: Direct Current Design—This course covers the design of direct current generators and motors, including the use of the different conducting, magnetic and insulating materials. Required of students in electrical engineering.

Lectures and recitations, 2 hours; practice, 9 hours; 3d term. Credit 5.

E. Des. 102: Alternating Current Design—The complete design of an alternating current generator or a transformer. Required of students in electrical engineering.

Practice, 3 hours; 1st term. Credit 1.

ELECTRICAL ENGINEERING LABORATORY

El. Lab. 101: Electrical Engineering Laboratory—A laboratory course designed to verify the laws and principles outlined in E. E. 101. Required of students in electrical and rural engineering. Must be taken with E. E. 101.

Practice, 3 hours; 2d and 3d terms. Credit 2.

El. Lab. 102: Electrical Engineering Laboratory—This course includes the methods of measuring resistance, current and electromotive force; photometry; and elementary testing of generators and motors. Required of civil and mechanical engineering students. Must be taken with E. E. 111.

Practice, 3 hours; 1st term. Credit 1.

El. Lab. 103: Electrical Engineering Laboratory—A continuation of El. Lab. 102. Required of students in mechanical engineering. Must be taken with E. E. 112.

Practice, 3 hours; 2d term. Credit 1.

El. Lab. 104: Electrical Engineering Laboratory—Study and calibration of instruments. Measurement of resistance, current and electromotive force; commercial tests on generators and motors; arc lamp testing and

photometry. Required of students in electrical engineering. Must be taken with E. E. 102 and 103.

Practice, 6 hours, 1st and 3d terms; 3 hours, 2d term. Credit 5.

El. Lab. 105: Electrical Engineering Laboratory—Measurement of inductance, impedance, condensance, etc.; power measurements in alternating current circuits; regulation and efficiency tests of alternators and transformers; operating characteristics of synchronous and induction motors. Required of students in electrical engineering. Must be taken with E. E. 104.

Practice, 6 hours; 1st, 2d and 3d terms. Credit 6.

El. Lab. 106: Telephone Laboratory—This course covers experimental work with all types of telephone apparatus and the operation of the magneto and common battery exchanges. Required of students in electrical engineering. Must be taken with E. E. 107.

Practice, 3 hours; 2d term. Credit 1.

El. Lab. 107: Wireless Laboratory—At present this course is confined to practice in sending and receiving signals in the Continental Code by means of radio instruction sets. Required of students in electrical engineering. Must be taken with E. E. 108.

Practice, 3 hours; 2d term. Credit 1.

EXPERIMENTAL LABORATORY

Exp. Lab. 101: Testing—Study of testing machines and accessories. Operation of steam engine. Study of planimeter and indicator. Test of gas engines. Tension test of wrought iron and steel. Transverse tests of cast iron and timber. Compression tests of long and short wood and concrete columns. Prereq. Mec. 103. Required of all engineering students.

Practice, 3 hours; 2d term. Credit 1.

Exp. Lab. 102: Experimental Engineering—Determining the amount of moisture in steam; the efficiency of the injector; the transit and its uses; indicator practice; slide valve setting; the slide rule and micrometer; the analysis of boiler feed water; flue gases; lubricating oils; and the determination of the heating value of fuels and moisture in steam. Required of students in mechanical engineering.

Practice, 3 hours; 3d term. Credit 1.

Exp. Lab. 103: Cement Testing—Standard tests of cement and concrete mortars. Time of setting. Tension and compression tests. Required of students in civil and mechanical engineering.

Practice, 3 hours; 1st term. Credit 1.

Exp. Lab. 104: Experimental Engineering—A continuation of Exp. Lab. 102. Required of students in mechanical engineering.

Practice, 3 hours, 1st and 3d terms; 6 hours, 2d term. Credit 4.

Exp. Lab. 1: Experimental Laboratory—Tests of steam, gas and oil engines. Determining the strength of iron and steel. The efficiency of pumps and injectors. Tests of heating values of fuels.

Practice, 3 hours; 3d term.

HIGHWAY ENGINEERING

Hwys. 101: Highways—Theory of location, construction and maintenance of country roads and city streets and pavements. Prereq. Surv. 105. Required for civil and elective for rural engineering students.

Lectures and recitations, 4 hours; 3d term. Credit 4.

Hwys. 102: Materials Laboratory—Tests of oils, asphalts, tars and road binders. Prereq. Chem. 103. Elective for students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

HYDRAULIC AND SANITARY ENGINEERING

Hyd. 101: Hydraulics—Principles of Hydraulics. Flow in open channels and pipes and through orifices. Methods of measurement, stream gauging, etc. Prereq. Mech. 102. Required of all students in engineering.

Lectures and recitations, 3 hours; 3d term. Credit 3.

Hyd. 102: Hydraulics—Determination of the co-efficients of discharge, velocity and contraction in pipes, orifices and weirs. Stream gauging methods. Flow measurements. Prereq. Hyd. 101. Required of students in civil and rural engineering.

Practice, 3 hours; 1st term. Credit 1.

Hyd. 103: Hydromechanics—Pumps, pumping machinery, water wheels and turbines. Friction losses in plants and water systems. Study of distribution systems. Prereq. Hyd. 101. Require of students in civil, electrical and mechanical engineering. Elective for rural engineering students.

Lectures and recitations, 3 hours; 1st term. Credit 3.

Hyd. 104: Water Supply—Principles of water supply engineering. Quantity of water required for municipal systems. Fire systems. Flow from drainage areas. Conduits and distribution systems. Quality of water and methods of purification. Prereq. Hyd. 101. Elective for students in civil, mechanical and rural engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Hyd. 105: Water Supply—Design of distribution system for small town, small pumping station and stand pipes. Estimate of cost. Prereq. Hyd. 104. Elective for students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Hyd. 106: Sewerage—Principles of sewer design. House drainage. Modern methods of sewage disposal. Prereq. Hyd. 101. Elective for students in civil and rural engineering.

Lectures and recitations, 2 hours; 3d term. Credit 3.

Hyd. 107: Sewerage—Design of small sewerage system and disposal plant. Elective for students in civil and rural engineering. Must be taken with Hyd. 106.

Practice, 3 hours; 3d term. Credit 1.

Hyd. 108: Drainage—Study of the principles of underground flow. Drainage of farm lands. Planning of the systems. Elective for non-engineering students. Must be taken with Surv. 110.

Lecture and recitation, 1 hour; 3d term. Credit 1.

Hyd. 109: Drainage—Field practice in study of drainage conditions. Planning the system from notes in field. Elective for non-engineering students. Must be taken with Hyd. 108.

Practice, 3 hours; 3d term. Credit 1.

Hyd. 110: Advanced Drainage—Continuation of Hyd. 108 and 109. Elective for rural engineering students.

Lecture, 1 hour; practice, 3 hours. Credit 2.

Hyd. 1: Drainage—Elementary course in farm drainage for students in two-year course in agriculture.

Lectures and recitations, 2 hours; practice, 6 hours.

MACHINE DESIGN

M. Des. 101: Elementary Machine Design—Freehand sketching of the details of machinery and making working drawings of same. Calculations and drawings of a simple type punching press. Prereq. Dr. 108. Required of students in electrical, mechanical and rural engineering.

Lecture and recitation, 1 hour, 1st term; practice, 3 hours; 1st term. Credit 2.

M. Des. 102: Machine Design—A continuation of M. Des. 101. Required of students in electrical and mechanical engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2d term. Credit 3.

M. Des. 103: Machine Design—A continuation of M. Des. 102. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

M. Des. 104: Kinematics of Machinery—Centrodes. Determination of the instantaneous axis and instantaneous center. Preparation of displacement, velocity and acceleration diagrams. Design of cams. Slow advance and quick return motion for machine tools. Form of tooth outlines in the epicycloidal and involute systems. Prereq. M. Des. 101. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

M. Des. 105: Design of Farm Machinery—The design and drafting of those portions of farm machinery common to engines, and to harvesting, pumping and fertilizing machinery, such as levers, shafts, gears and frames. Prereq. M. Des. 101. Elective for students in rural engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2d and 3d terms. Credit 6.

M. Des. 1: Machine Drafting and Design—The designing and detailing of a complete machine, including the determination of the stresses and the calculations for the various parts. Both empirical and rational methods are used.

Practice, 6 hours; 1st, 2d and 3d terms.

MATHEMATICS

Math. 101: Trigonometry—Plane and Spherical Trigonometry. Deduction of formulas and their application to the solution of triangles; trigonometric equations, etc. Required of students in engineering.

Lectures and recitations, 5 hours; 1st term. Credit 5.

Math. 102: Trigonometry—An abbreviated course similar to Math. 101. Required of chemical and elective for agricultural students.

Lectures and recitations, 4 hours; 1st term. Credit 4.

Math. 103: Analytic Geometry—Geometry of two and three dimensions, loci of general equations of second degree, higher plane curves, etc. Prerequisite, Math. 101 or 102. Required of students of chemistry and engineering.

Lectures and recitations, 5 hours; 2d and 3d terms. Credit 10.

Math. 104: Advanced Algebra—Algebra beyond that required for admission. Elementary theory of equations, partial fractions, permutations, etc. Required of engineering students.

Lectures and recitations, 3 hours; 1st term. Credit 3.

Math. 105: Calculus—A discussion of the methods used in differentiation and integration and the application of these methods in determining maxima and minima, areas, volumes, moments of inertia, etc. Prerequisite, Math. 103. Required of engineering students.

Lectures and recitations, 2 hours, 1st term; 5 hours, 2d and 3d terms. Credit 12.

Math. 106: Mathematics—A general course in algebra and calculus suited to the needs of the students of chemistry. Prereq. Math. 103.

Lectures and recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Math. 107: Differential Equations—The solution of the simpler differential equations is discussed. Prereq. Math. 105. Elective for students in civil and mechanical engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Math. 108: Estimates and Costs—Methods of estimating costs, supplemented by problems of a practical nature. Required of students in civil and rural engineering.

Practice, 3 hours; 1st term. Credit 1.

Math. 1: Shop Mathematics—Advanced arithmetic. Preliminary review. Common and decimal fractions. Short methods and checks. Percentage. Ratio and proportion. Powers and roots. These are based on their relation to shop problems.

Recitations, 4 hours; 1st term.

Math. 2: Shop Mathematics—Algebra, notation and definitions. Addition and subtraction. Multiplication and division. Exponents. Powers and roots. Formulas. Equations. Sufficient drill is given to make direct applications to practical problems in the shop and drawing room.

Recitations, 4 hours; 2d term.

Math. 3: Shop Mathematics—Geometry. Plane surfaces, lines and angles. Triangles. Circles. Pyramids. Prisms. Cones and frustums. Spheres. Some elementary proofs are required of the students. Facts or principles are discussed in ways to show their reasonableness. Devices and methods used by practical men are applied to the solution of problems pertaining to the various trades.

Recitations, 3 hours; 3d term.

Math. 4: Shop Mathematics—Trigonometry and Logarithms. An introduction to trigonometry covering the functions of angles and the solution of right triangles. Logarithms. Trigonometric tables and their uses. Emphasis is placed upon applications to practical problems.

Recitations, 4 hours; 1st term.

Math. 5: Shop Mathematics—Engineering mathematics. The correlation of arithmetic, algebra, geometry and trigonometry is clearly shown in this course and such problems are involved as include a combination of all the student's mathematics in the solution.

Recitations, 4 hours; 3d term.

Math. 6: Estimates and Costs—The object of this course is to teach the student to analyze the probable cost of the construction of machines from the drawings and how to deal with such items as profits, overhead charges and depreciation.

Recitations, 4 hours; 3d term.

MECHANICAL ENGINEERING

M. E. 101: Technical Instruction—Explanation of the reading of mechanical drawings; the proper cutting angles, care and adjustment of carpenter tools; relative strength of wood joints; wood, its shrinking and warping, and how to correct and prevent. Drill in problems in arithmetic, algebra and drawing by notes and lectures. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; 1st term. Credit 2.

M. E. 102: Steam Engines, Boilers and Dynamos—The principles of steam and the steam engine. The slide valve and valve diagrams. The indicator and its diagram. Steam boiler, the various types and their advantages. Each student taking this course is required to spend certain hours in the power plant actually operating the engines, boilers and dynamos. Required of students in electrical and mechanical engineering. Elective for rural engineering students.

Lectures and recitations, 3 hours; 1st term. Credit 3.

M. E. 103: Technical Mechanics—Elementary principles of applied mechanics, calculation of gear and pulley trans, bent levers, calculation of belt lengths, lacing belts, the suction pump, and bolts and screws. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

M. E. 104: Heat Engineering—Laws of fundamental equations; perfect gases; compound, hot-air and gasoline engines; theory of vapors; relation between pressure, volume, temperature, work and heat for special changes of state; calculation and drawing of Carnot's cycle and temperature entropy diagram. The steam turbine. Compressed air and refrigeration machinery. Prereq. M. E. 102. Required of students in electrical and mechanical engineering.

Lectures and recitations, 2 hours; 1st term. Credit 2.

M. E. 105: Heat Engineering—A continuation of M. E. 104. Required of mechanical engineering students.

Lectures and recitations, 3 hours; 2d and 3d terms: Credit 6.

M. E. 106: Heating and Ventilation—The principles of ventilating; amount of heat required for warming; radiating surfaces; steam, hot-water and hot-air systems; vacuum and vapor systems; pipe and pipe systems; appliances; specifications and contracts. Prereq. Dr. 108. Required of mechanical and rural and elective for civil engineering students.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term. Credit 3.

M. E. 107: Farm Machinery—A detailed study of the farm implements. One of the objects of the course is to familiarize the students with the latest improvements in farm machinery. Given by lectures and practical work. Elective for students in agricultural courses. Required of students in rural engineering.

Lectures and recitations, 3 hours; practice, 3 hours; 2d term. Credit 4.

M. E. 108: Advanced Farm Machinery—A continuation of M. E. 107. Elective for students in agricultural courses.

Lecture, 1 hour; practice, 3 hours; 1st term. Credit 2.

M. E. 109: Gas Engines—The fundamental principles concerning the gas engine. Its applications to agricultural operations. Elective for students in agricultural courses.

Lectures and recitations, 3 hours; practice, 3 hours; 2d term. Credit 4.

M. E. 1: Farm Machinery—A course similar to M. E. 107, for students in the two-year course in agriculture.

Lecture and recitation, 1 hour; practice, 3 hours; 2d term.

M. E. 2: Gas Engines—A course similar to M. E. 109, for students in the two-year course in agriculture. Elective.

Lectures and recitations, 2 hours; practice, 3 hours; 3d term.

M. E. 3: Technical Instruction—Explanation of the reading of mechanical drawings; the proper angles for wood-cutting tools, care and adjustment of carpenter tools; relative strength of wood joints; wood, its

shrinking and warping, and how to prevent and correct. Sketching by freehand of tools and apparatus.

Recitations, 2 hours; 1st, 2d and 3d terms.

M. E. 4: Heat Engines—Elementary laws of steam and gases. Principles of the steam, gas and oil engine. The steam turbine. Compressed air and refrigeration machinery.

Recitations, 4 hours; 1st term.

M. E. 5: Technical Mechanics—Mechanics of materials with applications to strength of machine parts, power transmission, belting, gears, cams, rope and chain drives, boilers and pumps.

Recitations, 4 hours; 1st, 2d and 3d terms.

M. E. 6: Power Plant Operation—The actual operation of boilers, engines, pumps and electric generators. This includes heating systems. The work will be done on Friday nights.

Practice, 3 hours; 1st term.

MECHANICS AND MATERIALS OF CONSTRUCTION

Mech. 101: Graphic Statics—The theory and practice of the method of determining stresses in cranes, roof trusses and bridges, and stresses on beams and girders due to traveling loads. Analysis of the stresses in roof trusses by the force polygon. Application of the equilibrium polygon to beams and girders. Analysis of stresses in bridge trusses. Prereq. Phys. 101 and Dr. 102 and 103. Required of engineering students.

Lectures and recitations, 2 hours; practice, 3 hours; 2d term. Credit 3.

Mech. 102: Analytical Mechanics—A study of statics dealing with the composition and resolution of forces, moments, couples, machines and laws of friction; and of dynamics, dealing with velocity, acceleration, laws of motion, work, energy and applications to problems. Prereq. Phys. 101 and Math. 105. Required of engineering students.

Lectures and recitations, 3 hours; 3d term. Credit 3.

Mech. 103: Mechanics of Engineering—The mechanics of solids. Statics of material point and of rigid bodies. Chains and cords. Centrifugal and centripetal forces. Work. Power. Energy. Sliding friction, friction of journals, friction of pivots, friction of ropes and belts. Analysis of stresses in thick cylinders. Prereq. Mech. 102. Required of students in engineering.

Lectures and recitations, 5 hours; 1st term. Credit 5.

Mech. 104: Mechanics of Engineering—A continuation of Mech. 103. Required of students in civil and mechanical engineering.

Lectures and recitations, 2 hours; 2d and 3d terms. Credit 4.

Mech. 105: Materials of Construction—A study of the manufacture, composition and properties of the various materials used in engineering. Required of students in civil and mechanical engineering. Prereq. Mech. 103.

Lectures and recitations, 2 hours; 2d term. Credit 2.

MILITARY INSTRUCTION

(G. O. No. 49—War Department).

M. I. 101: Basic Course—

1. Military art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); Infantry drill (U. S. Infantry Regulations), to include the School of the Soldier, Squad and Company, close and extended order. Preliminary instruction sighting position and aiming drills, gallery practice, nomenclature and care of rifle and equipment.

(b) Theoretical. Weight 4. Theory of target practice, individual and collective (use of landscape targets made up by U. S. Military Disciplinary Barracks, Fort Leavenworth, Kan.; military organization (Tables of Organization); map reading; service of security; personal hygiene.

2. Military Art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. Physical drill (Manual of Physical Training—Koehler); infantry drill (U. S. Infantry Drill Regulations), to include school of battalion, special attention devoted to fire direction and control; ceremonies; manuals (Part V, Infantry Drill Regulations); bayonet combat; intrenchments (584-595, Infantry Drill Regulations); first-aid instruction; range and gallery practice.

(b) Theoretical. Weight 4. Lectures, general military policy as shown by military history of United States and military obligations of citizenship; service of information; combat (to be illustrated by small tactical exercises); United States Infantry Drill Regulations, to include School of Company; camp sanitation for small commands.

M. I. 102: Basic Course—

3. Military Art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. The same as course 2 (a). Combat firing, if practicable, but collective firing should be attempted in indoor ranges by devices now in vogue at United States Disciplinary Barracks.

(b) Theoretical. Weight 4. United States Infantry Drill Regulations, to include School of Battalion and Combat (350-622); Small-Arms Firing Regulations; lectures as in (b) course 2; map reading; camp sanitation and camping expedients.

4. Military Art. Three hours a week (counting 14 units).

(a) Practical. Weight 10. The same as course 2 (a); signaling; semaphore and flag; first aid. Work with sand table by constructing to scale intrenchments, field works, obstacles, bridges, etc. Comparison of ground forms (constructed to scale) with terrain as represented on map; range practice.

(b) Theoretical. Weight 4. Lectures, military history (recent); service of information and security (illustrated by small tactical problems in patrolling, advance guards, rear guards, flank guards, trench and mine

warfare, orders, messages and camping expedients); marches and camps (Field Service Regulations and Infantry Drill Regulations).

M. I. 103: Advanced Course—

5. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises laid down for the unit or units. Military sketching.

(b) Theoretical. Weight 11. Minor tactics; field orders (studies in minor tactics, United States School of the Line); map maneuvers. Weight 8. Company administration, general principles (papers and returns). Weight 1. Military history. Weight 2.

6. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Same as (a) course 5. Military sketching.

(b) Theoretical. Weight 11. Minor tactics (continued); map maneuvers. Weight 8. Elements of international law. Weight 2. Property accountability; method of obtaining supplies and equipment (Army Regulations). Weight 1.

M. I. 104: Advanced Course—

7. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Duties consistent with rank as cadet officers or non-commissioned officers in connection with the practical work and exercises scheduled for the unit or units. Military sketching.

(b) Theoretical. Weight 11. Tactical problems, small forces, all arms combined; map maneuvers; court-martial proceedings (Manual for Courts-martial). International relations of America from discovery to present day; gradual growth of principles of international law embodied in American diplomacy, legislation and treaties. Lectures: Psychology of war and kindred subjects; general principles of strategy only, planned to show the intimate relationship between the statesman and the soldier (not to exceed five lectures).

8. Military Art. Five hours a week (counting 24 units).

(a) Practical. Weight 13. Same as course 7 (a).

(b) Theoretical. Weight 11. Tactical problems (continued); map maneuvers. Rifle in war. Lectures on military history and policy.

PHYSICS

Phys. 101: Mechanics and Sound—Lectures, recitations and demonstrations on mechanics and sound. Prereq. Math. 103. Required of students in engineering, chemistry and general science. Must be taken with Phys. Lab. 101.

Lectures and recitations, 4 hours; 1st term. Credit 4.

Phys. 102: Electricity and Magnetism—The elementary theory of electricity and magnetism and the practical application of the various laws.

Required of students in engineering, chemistry and general science. Must be taken with Phys. Lab. 102.

Lectures and recitations, 4 hours; 2d term. Credit 4.

Phys. 103: Heat and Light—Nature of heat; expansion, change of state; transmission and radiation of heat, and the elements of thermodynamics. Theory of light; reflection, refraction; dispersion, etc.; use of prisms, lenses and mirrors. Required of students in engineering, chemistry and general science. Must be taken with Phys. Lab. 103.

Lectures and recitations, 4 hours; 3d term. Credit 4.

Phys. 104: General Physics—A discussion of such branches of physics as are suited to the needs of students in the agricultural courses. Elective. Must be taken with Phys. Lab. 104.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

PHYSICS LABORATORY

Phys. Lab. 101: Mechanics and Sound—Quantitative experiments illustrating the laws and principles studied under Phys. 101. Required of students in engineering, chemistry and general science. Must be taken with Phys. 101.

Practice, 3 hours; 1st term. Credit 1.

Phys. Lab. 102: Electricity and Magnetism—The study of magnetic fields and the measurement of current, electromotive force, resistance, etc. Required of students in engineering, chemistry and general science. Must be taken with Phys. 102.

Practice, 3 hours; 2d term. Credit 1.

Phys. Lab. 103: Heat and Light—Quantitative experiments in heat and light. Required of students in engineering, chemistry and general science. Must be taken with Phys. 103.

Practice, 3 hours; 3d term. Credit 1.

Phys. Lab. 104. General Physics—Experiments illustrating the subjects discussed in Phys. 104. Elective for students in the agricultural courses. Must be taken with Phys. 104.

Practice, 3 hours; 1st, 2d and 3d terms. Credit 3.

Phys. 1: General Physics—An elementary course including lectures, recitations and laboratory work in mechanics, heat, light, electricity and magnetism. Special attention is paid to practical application.

Recitations, 3 hours; practice, 3 hours; 1st, 2d and 3d terms.

RAILWAY ENGINEERING

Rwys. 101: Railway Curves—Simple and compound curves, frogs, turn-outs and crossings. Spirals. Prereq. Surv. 105. Required of students in civil engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Rwys. 102: Railway Earthwork—Cross-sectioning earthwork computations. Haul, overhaul, mass diagrams. Prereq. Rwys. 101. Required of students in civil engineering.

Lectures and recitations, 2 hours; 3d term. Credit 2.

Rwys. 103: Railway Surveying—Preliminary surveys, location surveys, taking of cross-sections. Computation of quantities. Estimates. Prereq. Rwys. 101. Must be taken with Rwys. 102. Required of students in civil engineering.

Practice, 6 hours; 3d term. Credit 2.

Rwys. 104: Railway Economics—Ballasting, track fastenings, rails, buildings and structures, terminals, signaling, rolling stock. Promotion, operating expenses, effects of curvature and grade. Valuation, repairs and renewals. Prereq. Rwys. 101. Required of students in civil engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

SHOP PRACTICE

Shop. 101: Woodwork—During the first term is taught the use and care of bench tools, exercise in sawing, mortising, tenoning and laying out work from blueprints. The second term is devoted to projects involving construction, decoration and wood-turning. During the third term the principles and process of pattern-making are taught, together with enough foundry work to demonstrate the uses of pattern-making. Required of students in mechanical engineering.

Practice, 3 hours; 1st and 3d terms; 6 hours, 2d term. Credit 4.

Shop 102: Woodwork—A course similar to Shop 101, for students in electrical and rural engineering.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Shop 103: Woodwork—A short course similar to the first term of Shop 101, for students in civil engineering.

Practice, 3 hours; 1st term. Credit 1.

Shop 104: Woodwork—A course for students in agricultural courses, in which emphasis is laid on the types of woodwork used on the farm. Elective.

Practice, 3 hours; 2d term. Credit 1.

Shop 105: Blacksmithing—The making of the fire and how to keep it in order. The operations of drawing out, upsetting and bending of iron and steel, including the calculations of stock for bent shapes. Welding. Construction of steel tools for use in the machine shop, including tool dressing and tempering. Annealing. Prereq. Shop 101.

Practice, 6 hours; 2d term. Credit 2.

Shop 106: Blacksmithing—A course similar to Shop 105, for students in electrical and rural engineering.

Practice, 3 hours; 2d term. Credit 1.

Shop 107: Forging and Pipefitting—A course fitted to meet the needs of students in agriculture. Elective.

Practice, 3 hours; 3d term. Credit 1.

Shop 108: Foundry Work—Molding in iron and brass. Core-making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals. Prereq. Shop 105. Required of students in mechanical engineering.

Practice, 6 hours; 3d term. Credit 2.

Shop 109: Machine Work—Elementary principles of vise and machine work, which include turning, planing, drilling, screw-cutting and filing. This is preceded by study of the different machines used in machine shops. Required of students in mechanical engineering.

Practice, 3 hours; 3d term. Credit 1.

Shop 110: Machine Work—A continuation of Shop 109. Required of students in mechanical engineering.

Practice, 9 hours, 1st term; 6 hours, 2d term. Credit 5.

Shop 111: Machine Work—A course suited to the needs of students in electrical engineering.

Practice, 3 hours; 1st and 2d terms. Credit 2.

Shop 1: Farm Woodwork—Use of tools in constructing trestles, gates and frames. Required of students in the two-year course in agriculture.

Practice, 3 hours; 2d term.

Shop 2: Forging and Pipefitting—Similar to Shop 107, for students in the two-year course in agriculture.

Practice, 3 hours; 3d term.

Shop 3: Carpentry and Pattern-Making—Joinery. Pattern and core box construction. Wood-turning.

Practice, 6 hours; 1st term.

Shop 4: Advanced Woodwork—In this course the special needs of the student are considered in laying out the work.

Practice, 3 hours; 3d term.

Shop 5: Blacksmithing—The making of the fire and how to keep it in order. The operations of drawing out, upsetting and bending of iron and steel, including the calculation of stock for bent shapes. Welding. Making, tempering and annealing of steel tools.

Practice, 6 hours; 2d term.

Shop 6: Foundry—Molding in iron and brass. Core-making. The cupola and its management. Lectures on the selection of irons by fracture, fuels, melting and mixing of metals.

Practice, 6 hours; 3d term.

Shop 7: Machine Work—Elementary principles of vise and machine work, which includes chipping, filing, turning, planing, drilling, screw-cutting and polishing. The study of the different machines precedes the operations.

Practice, 6 hours; 1st term.

Shop 8: Advanced Machine Work—Milling, gear-cutting, tool-making, including taps, dies and reamers. Plain and differential indexing. Pipe cutting and fitting.

Practice, 9 hours; 2d term.

Shop 9: Shop Work—Students will be permitted to specialize in any of the shop courses. The work is of an advanced nature.

Practice, 9 hours; 3d term.

Shop 10: Machine Work—A course similar to Shop 7 for students in electricity.

Practice, 3 hours; 3d term.

STRUCTURAL DESIGN

Str. Des. 101: Elementary Structural Design—This course includes the complete design and detailing of a steel roof truss and a plate girder; the detailing from standard commercial drawing sheets of floor beams, girders and columns, and the complete design of a bridge truss of either the Warren or Pratt type. The stresses are determined by both analytical and graphic methods. Prereq. Mech. 103. Required of students in civil and rural engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2 and 3d terms. Credit 6.

Str. Des. 102: Structural Design—Analysis of stresses in structural steel buildings. Design of roof trusses. Design of truss bridges and highway bridges. Design of plate girders under dead and live loads. Design of riveted connections. Both analytical and graphical methods are used. Prereq. Str. Des. 101. Required of students in civil engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 1st, 2d and 3d terms. Credit 9.

Str. Des. 103: Structural Design—Analysis of stresses in traveling cranes and derricks. Design of crane girders and lattice girders. Design of cranes. Both analytical and graphical methods are used. Design of riveted connections. Prereq. M. Des. 102. Required of students in mechanical engineering.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms; practice, 6 hours, 1st and 3 terms; 3 hours, 2d term. Credit 11.

Str. Des. 104: Concrete Theory—Manufacture, tests and uses of cement and concrete. Design of slabs, beams, girders and columns, plain and reinforced. Prereq. Mec. 103. Required of students in civil and rural engineering.

Lectures and recitations, 2 hours; 1st term. Credit 2.

Str. Des. 105: Concrete Design—Design of retaining walls, foundations and arches, plain and reinforced. Prereq. Str. Des. 104. Required for civil and elective for rural engineering students.

Lectures and recitations, 2 hours; 2d term. Credit 2.

Str. Des. 106: Retaining Walls and Concrete Arches—Design of a typical retaining wall and complete design of an arch of reinforced concrete construction, including abutments. Must be taken with Str. Des. 105. Required for civil and elective for rural engineering students.

Practice, 3 hours; 2d term. Credit 1.

Str. Des. 107: Design of Farm Structures—The design and arrangement of farm buildings and equipment. Lectures also cover the heating, lighting, ventilation, plumbing and costs. Prereq. Str. Des. 101. Elective for students in rural engineering.

Lectures and recitations, 2 hours; practice, 3 hours; 2d and 3d terms. Credit 6.

Str. Des. 108: School Architecture—The planning and detailing of moderate priced and medium sized school buildings, including the heating, ventilation, lighting and plumbing. Prereq. Str. Des. 101. Elective for students in rural engineering.

Lectures and recitations, 3 hours; practice, 3 hours; 3d term. Credit 4.

Str. Des. 109: Farm Buildings—Design and specifications of a simple typical building in timber or concrete and lectures upon the details. The course is very practical and latitude is permitted the student to develop his ideas. Prereq. Dr. 107. Elective for non-engineering students.

Lectures and recitations, 1 hour; practice, 3 hours; 1st term. Credit 2.

Str. Des. 1: Farm Buildings—An elementary course similar to Str. Des. 109. Prereq. Dr. 1. Required of students in the two-year course in agriculture.

Lectures and recitations, 1 hour; practice, 3 hours; 1st term.

SURVEYING

Surv. 101: Surveying—Elements of surveying. Measurement of horizontal and level lines. Errors, use of compass, transit and level. Prereq. Math. 101. Required of students in civil, electrical and rural engineering.

Lectures and recitations, 2 hours; 2d term. Credit 2.

Surv. 102: Surveying—Application of the principles of elementary surveying to practical operations in the field. Measurement of lines, angles, elevations. Introductory use of the transit and level. Prereq. Surv. 101. Required of students in civil, electrical and rural engineering.

Practice, 3 hours; 3d term. Credit 1.

Surv. 103: Surveying—Adjustment of instruments. Determination of direction. Measurement of angles. Land survey methods and computations. Prereq. Surv. 102. Required of students in civil and rural engineering. Must be taken with Surv. 104.

Lectures and recitations, 2 hours; 1st term. Credit 2.

Surv. 104: Surveying—Transit lines, level lines, traversing, mapping, computation of areas. Required of students in civil and rural engineering. Must be taken with Surv. 103.

Practice, 3 hours; 1st term. Credit 1.

Surv. 105: Advanced Surveying—Theory of stadia. General surveying methods. Topographic surveying. Plane table. Earthwork computations. City surveying. Hydrographic surveying. Prereq. Surv. 103. Required of students in civil engineering.

Lectures and recitations, 4 hours; 2d term. Credit 4.

Surv. 106: Advanced Surveying—Use of plane table. Topographic mapping. Solar observations. Prereq. Surv. 105. Required of students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Surv. 107: Topographic Surveying—Adjustment of instruments. Base line measurements. Elements of triangulation and adjustment of quadrilaterals. Prereq. Surv. 106. Required of students in civil engineering.

Practice, 3 hours; 1st term. Credit 1.

Surv. 108: Geodesy—Brief outline of the method of least squares. Applications to precise surveying, leveling and triangulation. Astronomical observations for azimuth, latitude, time and longitude. Prereq. Surv. 105. Elective for students in civil engineering.

Lectures and recitations, 3 hours; 2d term. Credit 3.

Surv. 109: Geodesy—Practice in problems developed in Surv. 109. Elective for students in civil engineering.

Practice, 3 hours; 3d term. Credit 1.

Surv. 110: Elementary Surveying—Measurement of lines, angles and elevations. Elementary use of transit and level. Prereq. Math. 101. Elective for non-engineering students. Must be taken with Hyd. 108.

Lectures and recitations, 1 hour; 3d term. Credit 1.

Surv. 111: Elementary Surveying—Application of principles of plane surveying to practical operations in the field. Profiles, trannes, computations of areas. Elective for non-engineering students. Must be taken with Surv. 110.

Practice, 3 hours; 3d term. Credit 1.

FACILITIES FOR INSTRUCTION

The Engineering Building is equipped with lecture-rooms, recitation-rooms, drafting-rooms, laboratories and shops for all of the engineering work except farm machinery, which is located in the Agricultural Building. The departments of Mathematics and Physics are also located in the Engineering Building. Quarters are provided for the Military Department in Calvert Hall.

The three drafting-rooms are well equipped for practical work. Two of these are used by the junior and senior classes, each student being provided with a separate desk. The third

room is used jointly by the freshman and sophomore students and contains 15 drawing tables, accommodating about 90 students.

Engineering students are to provide themselves with approved drawing outfit, materials and book, cost of which during the freshman year amounts to about \$15. The cost to other students taking mechanical drawing is about \$5. The College does not furnish these, but they are purchased by the student and are his property.

The combined blueprint and dark room, with its commodious printing frames, affords splendid opportunities for sun-printing, which is so useful to engineering students.

This laboratory is fitted with such appliances as may be used to the best advantage in engineering practice. These include a potentiometer and standard voltmeter and ammeter for calibrating the various measuring instruments used in the laboratory. A Sharp-Miller portable photometer and a standard photometer for measuring the candle power of lamps and for determination of illumination intensities. A large number of portable ammeters, voltmeters and indicating wattmeters for direct and alternating current measurements, standard curve drawing voltmeter and ammeter, electrostatic voltmeter, frequency meters, silver and copper voltameters, Siemen's type electrodynaometer, watthour meters and an oscillograph. A standard portable testing set, heating devices, condensers, tachometers, multiple circuit ammeter and voltmeter switches. D'Arsonval galvanometers, standard resistance boxes and bridges. The lamps used for experimental purposes include direct and alternating current multiple carbon arc, metallic arc, mercury vapor and nernst lamps.

A Curtis steam turbine, direct connected to a 35-kilowatt compound generator, has been installed for testing purposes. This may be used in connection with the College lighting plant when needed and will be used for light and power service in the Engineering Building.

The laboratory is so wired that connection may be made readily with any part of the College lighting plant with the

turbo-generator or with any of the apparatus in the dynamo-room.

The apparatus in the dynamo-room includes the following: A 10-kilowatt rotary converter of the latest type, with speed limit and end play devices; a five-horsepower variable speed, commutating pole motor; a 7.5 kilowatt, 60-cycle, 220-volt alternator designed to operate either as a polyphase generator, synchronous motor, frequency changer, constant speed induction motor or variable speed induction motor. The following parts are supplied with the set to make possible its operation in any of the above-named ways; a stationary armature for use either as an alternating current generator or as an induction motor field; a revolving field, a squirrel cage induction motor rotor with starting compensator having self-contained switches; an induction motor rotor with 3-phase collector rings, external resistance and controller; a 2-kilowatt booster set; a five-horsepower compound direct current motor and a 1.5 horsepower shunt motor fully inclosed; a 7.5 kilowatt, 120-volt, 3-phase self-excited generator direct connected to a 115-volt compound direct current motor; a motor-generator set consisting of a 3.6 horsepower shunt motor direct connected to a 2-kilowatt generator; several small D. C. and A. C. motors and generators; two 2-kilowatt transformers to transform power from 110 or 220 volts to 1100 or 2200 volts; various types of starting rheostats with automatic overload and no voltage release; field rheostats.

The main switchboards are used to mount the necessary circuit apparatus to control the generators and motors as well as the various circuits in the dynamo-room and testing laboratory. Wire and water rheostats are arranged for load and regulation. Portable lampboards and portable switchboards have been constructed for use in machine tests. In addition to the special electrical engineering equipment, the College lighting plant will be used for illustrative and experimental purposes. This plant contains, together with other apparatus useful in teaching electrical engineering, two Bullock generators of 40 kilowatts total capacity.

An eight-inch Waltham bench lathe, with all the necessary attachments, has been installed in the dynamo-room for the use of students in making small articles, such as binding posts, connectors, etc., for use in the laboratories.

The telephone laboratory is well equipped with apparatus for the magneto and common battery systems.

APPARATUS IN LABORATORIES

In the Farm Machinery Laboratory the different implements, machines, gasoline engines, etc., used on farms are to be found. Much of it is loaned by the manufacturers.

In the Hydraulic Laboratory hydraulic apparatus of a character suitable to the needs of the students has been installed.

In the Materials Laboratory the apparatus for testing materials includes a 100,000-pound Riehle combined hand and power testing machine for making tensile, compression, shearing and transverse tests on various kinds of materials; a 1,000-pound Riehle machine for testing cement briquettes, etc. The testing of asphalts, tars, etc., used in roadwork is carried on under the direction of the Department of Chemistry.

MECHANICAL ENGINEERING LABORATORY

Among the apparatus installed in the laboratory are a cross compound condensing Corliss engine of 50 horsepower, equipped with brake, indicators, relief valves, reducing motion, steam and vacuum gauges and speed indicator, which gives ample opportunity for steam consumption and brake tests. This is connected with the shops, so that at any time it may be switched on and drive them. The College power plant, with its vacuum heating system, three 100-horsepower return tubular boilers and two electric generating units, offers unexcelled opportunities for experimental work. A six-horsepower, four-cycle gasoline engine equipped with prony brake permits the making of tests in gas engineering.

The Physics Laboratory is well supplied with apparatus for lecture-room demonstrations and for experiments undertaken

by students. New pieces of apparatus are added to the equipment each year.

The shops are well lighted and admirably adapted to the purpose for which they were designed. The wood-working shop contains accommodations for bench work and wood turning. The power machinery in this shop is a band and universal circular saw, five 12-inch turning lathes, one 16-inch by 10-foot patternmaker's lathe, a grindstone, wood trimmer, 26-inch wood planer and universal tool grinder.

In the forge shops are 16 power forges, 2 hand forges and a pressure fan and exhauster for keeping the shop free of smoke. There is a full assortment of smith's tools for each forge.

The foundry is equipped with an iron cupola, which melts 1,200 pounds of iron per hour, a brass furnace, one core oven and the necessary flasks and tools.

The machine shop equipment consists of 1 10-inch speed lathe, 1 22-inch engine lathe with compound rest, 1 12-inch combined foot and power lathe, 2 14-inch engine lathes, 1 24-inch drill press, 1 No. 4 emery tool grinder, 1 No. 1½ universal milling machine and an assortment of vises, taps, dies, pipe-tools and measuring instruments.

The machinery of the pattern and machine shops is driven by a 9 by 14 inch automatic cut-off, high-speed engine, built by members of the junior and senior mechanical engineering classes, after the standard design of the Atlas engine. An 8 by 12 inch engine drives the machinery of the blacksmith shop and foundry. It was presented to the College by the city of Baltimore and secured through the efforts of the late Rear-Admiral John D. Ford.

The surveying equipment includes a number of transits, levels, compasses, plane tables and minor instruments for use in plane, topographic, railroad and geodetic work. These are added to as the necessity for other equipment arises.

Division of General Science

OFFICERS OF INSTRUCTION

H. B. McDONNELL...Dean, Professor of Chemistry.
L. B. BROUGHTON...Professor of Analytical Chemistry.
R. C. WILEY.....Assistant Professor of Chemistry.
E. R. HITCHNER....Assistant Professor of Bacteriology and Chemistry.
C. G. REMSBERG....Assistant in Analytical Chemistry.

INTRODUCTION

The Division of General Science is charged with two distinct classes of work. (1) The licensing, inspection and analysis of fertilizers, feeds and agricultural lime sold in the State, the professor of chemistry being, ex officio, the State Chemist. The results of this work are published in a "quarterly" bulletin, which is sent free to all Maryland farmers who apply for it. (2) The instruction of students.

The Chemical Laboratory Building contains laboratories, office and balance room for the State fertilizer, feed and lime control work, lecture room, supply room and four other laboratories. In addition classrooms in Morrill Hall are used and two bacteriological laboratories in the new Agricultural Building.

The laboratories are well equipped with standard apparatus and chemicals, chemical and assay balances, polariscopes, refractometers, spectrosopes, microscopes with high-power oil immersion lenses, etc. Each student is provided with a locker, reagents and apparatus and has the use of a working desk.

The division is provided with a library of standard reference books on chemistry and related subjects, to which additions are made from time to time.

Instruction in chemistry is begun with the first term of the freshman year. Laboratory work by the student is emphasized and special attention is given to elements and compounds of practical and economic importance. The first year is in-

tended to give the student that practical and theoretical knowledge of elementary chemistry which is essential in the education of every man, no matter what his vocation. It also serves as a foundation for advanced work in chemistry, if the course in chemistry is chosen.

OUTLINE OF COURSES OFFERED

The required and elective work of the various departments of the division is outlined on the following pages. The College reserves the right to withdraw any course at any time.

CHEMICAL COURSE

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3 | 3 | 3 |
| Public Speaking 101..... | 1 | 1 | 1 |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Mathematics 101—Trigonometry..... | 4 | ..... | ..... |
| Mathematics 102—Analytics..... | ..... | 5 | 5 |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Drawing 103—Mechanical Drawing..... | 3 | ..... | ..... |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |

SOPHOMORE YEAR.

| | | | |
|---|-------|-------|-------|
| Language—Modern Language..... | 3 | 3 | 3 |
| Chemistry 113—Advanced Inorganic Chemistry..... | 2 | 2 | 2 |
| Chemistry 103—Qualitative Analysis..... | 1(6) | ..... | ..... |
| Chemistry 105—Quantitative Analysis..... | ..... | 1(6) | 1(6) |
| Mathematics 103—Advanced Algebra..... | 3 | ..... | ..... |
| Mathematics 104—Calculus..... | ..... | 3 | 3 |
| Botany 103—Plant Physiology..... | 1(6) | ..... | ..... |
| Botany 104—Plant Physiology..... | ..... | 2(6) | ..... |
| Botany 116—Plant Micro-Chemistry..... | ..... | (6) | ..... |
| Soils 101—Introductory Study of Soils..... | 2(3) | ..... | ..... |
| Geology 102—General Geology..... | ..... | ..... | 3(3) |
| Geology 101—Determinative Mineralogy..... | ..... | ..... | 1(3) |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |

JUNIOR YEAR.

| | | | |
|--|-------|-------|-------|
| Language—Modern Language..... | 3 | 3 | 3 |
| Chemistry 108—Organic Chemistry..... | 3(3) | 3(3) | 3(3) |
| Chemistry 106—Quantitative Analysis..... | 2(9) | 2(9) | 2(9) |
| Physics 101 and 104—Mechanics and Sound..... | 4(3) | ..... | ..... |
| Physics 102 and 105—Electricity and Magnetism..... | ..... | 4(3) | ..... |
| Physics 103 and 106—Heat and Light..... | ..... | ..... | 4(3) |
| Military Instruction 103—Advanced Course..... | R | R | R |

SENIOR YEAR.

| | | | |
|---|-------|-------|-------|
| English 104—Lectures and Technical Composition..... | 2 | 2 | 2 |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| Rural Economics 103—Problems in Rural Economics..... | ..... | ..... | 3 |
| Chemistry 109—Agricultural Chemistry..... | 3 | ..... | ..... |
| Chemistry 110 and 115—Agricultural Chemical Analysis..... | (6) | (6) | (6) |
| Chemistry 111—Physiological Chemistry..... | 3(3) | ..... | ..... |
| Chemistry 112—Physical Chemistry..... | ..... | 3(3) | 3(3) |
| Chemistry 114—Industrial Chemistry..... | ..... | 3 | 3 |
| Military Instruction 104—Advanced Course..... | R | R | R |

GENERAL SCIENCE

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition and Rhetoric..... | 3 | 3 | 3 |
| Public Speaking 101..... | 1 | 1 | 1 |
| Zoology 101—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Mathematics 101—Trigonometry..... | 5 | ..... | ..... |
| Mathematics 102—Analytics..... | ..... | 5 | 5 |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Language—Modern Language..... | 3 | 3 | 3 |
| English 102—English Composition..... | 2 | 2 | 2 |
| Public Speaking 102..... | 1 | 1 | 1 |
| Mathematics 103—Advanced Algebra..... | 3 | ..... | ..... |
| Mathematics 104—Calculus..... | ..... | 3 | 3 |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| Electives..... | 8 | 8 | 8 |
| JUNIOR YEAR. | | | |
| Rural Economics 102—Principles of Economics..... | 3 | 3 | ..... |
| Government 104—Law of Contracts..... | ..... | ..... | 3 |
| Language—Modern Language..... | 3 | 3 | 3 |
| Physics 101 and 104—Mechanics and Sound..... | 4(3) | ..... | ..... |
| Physics 102 and 105—Electricity and Magnetism..... | 4(3) | ..... | ..... |
| Physics 103 and 106—Heat and Light..... | ..... | ..... | 4(3) |
| Military Instruction 103—Advanced Course..... | R | R | R |
| Electives..... | 6 | 6 | 6 |
| SENIOR YEAR. | | | |
| Government 101..... | 2 | 2 | 2 |
| Military Instruction 104—Advanced Course..... | R | R | R |
| Electives... .. | 15 | 15 | 15 |

***SUGGESTED ELECTIVES FOR STUDENTS IN GENERAL SCIENCE**

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| SOPHOMORE YEAR. | | | |
| Botany 102-103-104—Plant Histology and Physiology..... | 4 | 4 | 4 |
| Botany 116—Plant Micro-Chemistry..... | ..... | 2 | ..... |
| Chemistry 104 and 105—Quantitative Analysis..... | 3 | 3 | 3 |
| Chemistry 113—Inorganic Chemistry..... | 2 | 2 | 2 |
| Zoology—Advanced Zoology..... | 4 | 4 | 4 |
| Soils 101—A Study of Soils..... | ..... | 4 | ..... |
| Geology 102—General Geology..... | ..... | ..... | 4 |
| Literature—English Literature..... | 2 | 2 | 2 |
| Drawing 103—Mechanical Drawing..... | 2 | 2 | 2 |
| Zoology—General Entomology..... | ..... | ..... | 3 |
| JUNIOR YEAR. | | | |
| English..... | 2 | 2 | 2 |
| Public Speaking..... | 1 | 3 | 1 |
| Chemistry 108—Organic Chemistry..... | 4 | 3 | 4 |
| Bacteriology 101—General Bacteriology..... | 3 | 3 | 3 |
| Botany 105—General Plant Pathology..... | ..... | 3 | ..... |
| Botany 110—Genetics..... | ..... | 3 | ..... |
| Chemistry 104 and 105—Quantitative Analysis..... | 3 | 3 | 3 |
| Botany 112—Systematic Botany..... | ..... | ..... | 3 |
| Education 101—Problems in Secondary Education..... | 3 | 3 | ..... |
| Education 102—Educational Psychology..... | ..... | ..... | 3 |
| Education 103—School Observations and General Methods..... | 2 | 2 | 2 |
| Soils 102—Advanced Course..... | 3 | ..... | ..... |
| Geology 101—Determinative Mineralogy..... | ..... | ..... | 2 |
| SENIOR YEAR. | | | |
| Chemistry 109—Agricultural Chemistry..... | 3 | ..... | ..... |
| Chemistry 111—Physiological Chemistry..... | 4 | ..... | ..... |
| Bacteriology 101—General or Advanced Bacteriology..... | 3 | 3 | 3 |
| Chemistry 112—Physical Chemistry..... | ..... | 3 | 3 |
| Language—Modern Language..... | 3 | 3 | 3 |
| English..... | 2 | 2 | 2 |
| Education 104—Vocational Education..... | 2 | ..... | ..... |
| Education 105—Special Methods in Secondary Vocational Agriculture..... | ..... | 2 | 2 |
| Rural Economics 104—Economics..... | 3 | 3 | 3 |

*Subjects not indicated may be available.

*If any elective is not available when indicated because of conflicts or otherwise, it may be elected the following year. In all cases the students must consult their advisers.

DESCRIPTION OF SUBJECTS OFFERED

Following are descriptions of the courses offered by the various departments in the Division of General Science:

Chemical Course—The course in Chemistry differs but little from the other courses until the beginning of the sophomore year and the work in the freshman year of any of the four-year courses will prepare for it, as the amount of chemistry is

the same in all courses to the beginning of the sophomore year and the demands on the agricultural or technical chemist are now so varied that a foundation with more of the essentials of the agricultural or the engineering courses is often desirable.

Beginning with the sophomore year the major part of the student's time is devoted to chemistry, the practical work in the laboratory occupying approximately half his time. The course is essentially a course in agricultural chemistry, fitting the graduate for positions in agricultural colleges, experiment stations and the United States Department of Agriculture.

General Science Course—The General Science Course is offered to those young men who have not chosen as their vocation in life any of the technical professions, but who are seeking for such general culture as will fit them to become, after graduation, useful members of society. Young men desiring to study law or medicine or the liberal arts, or to become teachers, will find in the curriculum of this course a highly satisfactory preparation for such work. While emphasis has been placed upon subjects such as English language, literature, history, mathematics, etc., natural science occupies a prominent place in the course and the range of electives will enable each to choose for himself, under certain necessary regulations, such a group of studies as will be best adapted to his own peculiar requirements.

A wide range of electives is offered in order to meet, as far as possible, the needs of every student. At the opening of the session the student must select, with the approval of the Dean of the division, a consistent group of courses for the year. No change may be made in this group later in the session, except with the approval of the Dean.

CHEMISTRY

Chem. 101: General Chemistry—Recitations, lectures and practical work in the laboratory, where the student performs the experiments under the direction of instructors.

Lectures, 3 hours; practice, 3 hours; 1st and 2d terms. Credit 8.

Chem. 102: The Metals and Qualitative Analysis—A theoretical study of the occurrence, properties and metallurgy of the common metals, supplemented by a laboratory course in qualitative analysis.

Lectures, 2 hours; practice, 6 hours; 3d term. Credit 4.

Chem. 103: Qualitative Analysis—An advanced course of qualitative analysis. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 1st term. Credit 3.

Chem. 104: Quantitative Analysis—A brief course illustrating some of the general principles of the quantitative study of chemistry. In the latter part of the course the students are given samples of fertilizers, feeds, butter, milk, etc., for analysis. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 1st and 2d terms. Credit 3.

Chem. 105: Quantitative Analysis—The principal operations of quantitative analysis. Standardization of the chemical balance. Standardization of weights and apparatus used in chemical analysis. Typical gravimetric, volumetric, colormetric and electrolytic methods are taken up and discussed. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 2d and 3d terms. Credit 3.

Chem. 106: Quantitative Analysis—A continuation of course 105. An advanced course of quantitative analysis which consists of a study of methods used in the agricultural and industrial chemical world. Prereq. Chem. 104 or 105.

Lectures, 2 hours; practice, 9 hours; 1st, 2d and 3d terms. Credit 5.

Chem. 107: Agricultural Organic Chemistry—A study of the principal organic compounds of agriculture. Prereq. Chem. 101-102.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Chem. 108: Organic Chemistry—The chemistry of the carbon compounds. Prereq. Chem. 101-102.

Lectures, 3 hours; practice, 3 hours; 1st, 2d and 3d terms. Credit 4.

Chem. 109: Agricultural Chemistry—The chemistry of soils, fertilizers, plant life, animal life, etc. Prereq. Chem. 101-102.

Lectures, 3 hours; 1st term. Credit 3.

Chem. 110: Agricultural Chemical Analysis—An advanced course in the analysis of fertilizers and fertilizing materials, feeding stuffs, butter, milk, sugar, starch, etc. Prereq. Chem. 104.

Practice, 6 hours; 1st term. Credit 2.

Chem. 111: Physiological Chemistry—Lectures and recitations. Prereq. Chem. 107 or 108.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

Chem. 112: Physical Chemistry—A study of the advanced theories of chemistry. The laboratory consists of the determination of the boiling and melting points, lowering of the freezing point by substances in solution, determination of vapor densities, etc. Prereq. Chem. 104-107.

Lectures, 3 hours; practice, 3 hours; 2d and 3d terms. Credit 4.

Chem. 113: Inorganic Chemistry—An advanced course covering more in detail the subject matter set forth in the general chemistry offered in the freshman year. Prereq. Chem. 101.

Lectures, 2 hours; 1st, 2d and 3d terms. Credit 2.

Chem. 114: Industrial Chemistry—The study of the practical methods employed in various chemical industries. Visits are made to ice, fermen-

tation and gas plants; also to fertilizer, glass, iron and steel works, etc.
Prereq. Chem. 113.

Lectures, 3 hours; 2d and 3d terms. Credit 3.

Chem. 115: Advanced Agricultural Analysis—Prereq. Chem. 104-105.

Practice, 6 hours; 2d and 3d terms. Credit 2.

Chem. 116: Thesis—Investigation along agricultural chemical lines to be embodied in a graduating thesis.

Chem. 1: Farm Chemistry—This course consists of an elementary study of general and agricultural chemistry, with special reference to the chemistry of plants, animals, fertilizers, etc.

Lectures, 3 hours; practice, 3 hours; 1st and 2d terms.

GEOLOGY

Geol. 101: Determinative Mineralogy—This is a course of determinative mineralogy. The more important minerals are identified by their characteristic physical and chemical properties. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Geol. 102: General Geology—A course in the history of dynamic, stratigraphic and physiographic geology. The latter part of the course is devoted to the geology of Maryland, specially as affecting the character of the soil, mineral wealth and other economic conditions of the State.

Lectures, 3 hours; practice, 3 hours; 3d term. Credit 4.

Geol. 103: Engineering Geology—Discussion of the principles of geology. Study of geological materials of importance in engineering. Practical field work.

Lectures, 3 hours; practice, 3 hours; 1st term. Credit 4.

BACTERIOLOGY

Bact. 101: General Bacteriology—Preparation of media and stains. The practical application of various methods of sterilization. A study of the various procedures for anærobic development and isolation of bacteria in pure cultures. Standard procedures for the examination of pure cultures, supplemented by a routine determination of the morphological and physiological characteristics of pure cultures isolated from nature and having special functions in the field of agriculture, dairying and sanitation. The routine bacteriological examination of drinking waters, milk and its products, foods, soils and disinfectants. Lectures and practical demonstrations in immunity and resistance. Prereq. Chem. 101-102.

Lecture, 1 hour; practice, 6 hours; 1st, 2d and 3d terms. Credit 3.

TWO-YEAR AGRICULTURAL COURSE

Bact. 1: Bacteriology—Lectures and practical demonstrations of subjects pertaining to agricultural and dairy bacteriology, with emphasis on the bacteria in milk and soils.

Practice, 3 hours; 2d term.

Division of Vocational Education

OFFICERS OF INSTRUCTION

HAROLD F. COTTERMAN....Dean and Professor of Agricultural Education.

L. A. EMERSON.....Professor of Trade and Industrial Education.

-----Professor of Home Economics Education.

W. T. L. TALIAFERRO.....Professor of Farm Management.

P. F. BROOKENS.....Assistant Professor of Rural Economics.

GEORGE J. SCHULZ.....Instructor in Government and History.

INTRODUCTION

The Division of Vocational Education offers opportunity to prepare for teaching in secondary vocational schools of the types encouraged by the Smith-Hughes Act. As a means to that end its vocational education curricula and courses have the approval of the Maryland State Board of Education. Graduates from its curricula are eligible for certification by the State Superintendent of Schools without examination. The work is organized in four departments—namely, Agricultural Education, Home Economics Education, Trade and Industrial Education and Supervised Teaching.

In addition to the teacher training work, the division also includes the departments of Government, History and Rural Economics.

The four-year curricula of the division consist of regular collegiate courses and lead to the Bachelor's degree given by the College. These curricula consist of Agricultural Education, Home Economics Education, Trade and Industrial Education and Farm Management and Agricultural Economics. The Home Economics Education curriculum is offered in co-operation with the Division of Home Economics.

One-year curricula for the training of teachers of trade and industrial subjects and teachers of related trade and industrial subjects will be offered to persons of maturity. Upon the satis-

factory completion of such curricula, prospective teachers will be issued certificates of proficiency.

As the need for evening classes in Trade and Industrial and Home Economics Education arises, special curricula in these fields will be offered at centers throughout the State. The number and location of these centers will depend entirely upon the need and demand for such instruction. The courses will be organized on the short-unit basis and will be maintained only as long as the demand justifies it. Upon the satisfactory completion of such special curricula students will be issued certificates of proficiency.

Follow-Up Courses

By a uniform system of follow-up, the division keeps a complete record of the qualifications of the prospective teacher, of his work while in training, and of his efficiency as a teacher upon entering the field. As the beginning teacher's training is not considered complete until he has demonstrated his ability to turn out workers proficient in the vocation for which he is offering instruction, an attempt is made to give him such help as he may need from time to time, particularly during his first year's teaching experience.

In summer courses in vocational education are offered for the benefit of teachers in service and such individuals as may be able to qualify for the teaching of a vocation upon the completion of the work.

By a system of itinerant teaching, special courses in vocational education are offered in evenings and on Saturdays to teachers in service.

COURSES

Agricultural Education—In addition to the entrance requirements, involving graduation from a standard four-year high school, students electing the Agricultural Education curriculum must present evidence of having acquired farm experience after reaching the age of 14 years. Graduation will depend upon the successful completion of the curriculum as laid down and

farm experience equivalent to at least two years of farm work. Some of the farm experience may be acquired after the student has entered College.

The 48 hours of electives allowed by this curriculum may be selected from any of the courses offered by the College for which the student has the necessary prerequisites. This freedom affords not only an opportunity to acquire a broad training in agriculture of the type needed for farming and teaching the vocation, but permits also some specialization in a particular field of production as agronomy, pomology, vegetable gardening, or animal husbandry. In making such elections the student should consult the Dean in charge of the specialty as well as the Dean of this division. Students should arrange their work so that at least 40 per cent. of their time will have been spent on technical agriculture, 25 per cent. on scientific subjects, 20 per cent. on subjects of a general educational character and from 12 to 15 per cent. on subjects in professional education.

AGRICULTURAL EDUCATION

| SUBJECT. | TERM. | | |
|--|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English..... | 3 | 3 | 3 |
| Public Speaking..... | 1 | 1 | 1 |
| Chemistry 101—General Chemistry..... | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis..... | ..... | ..... | 2(6) |
| Zoology 101 and 102—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Vocational Education 101—Freshman Lectures..... | 1 | 1 | 1 |
| History 101-102-103—Industrial History, or Mathematics, or..... | 4 | 4 | 4 |
| Language..... | ..... | ..... | ..... |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops..... | 3(3) | ..... | ..... |
| Soils 101—Introductory Study of Soils..... | ..... | 3(3) | ..... |
| Geology..... | ..... | ..... | 3(3) |
| Pomology 101—Principles of Pomology..... | 3(3) | ..... | ..... |
| Botany 103 and 104—Plant Physiology..... | ..... | 2(6) | 2(6) |
| Animal Husbandry..... | 3(3) | 2(3) | ..... |
| Vegetable Gardening 101—Principles of Vegetable Gardening..... | ..... | ..... | 3(3) |
| Elective..... | 5 | 6 | 5 |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |
| JUNIOR YEAR. | | | |
| English..... | 2 | 2 | 2 |
| Rural Economics 101—Principles of Economics..... | 3 | 3 | ..... |
| Soils 102..... | 2(3) | ..... | ..... |
| Poultry..... | ..... | 2(3) | ..... |
| Agronomy 103—Forage Crops..... | ..... | ..... | 2(3) |
| Vocational Education 102—Principles of Teaching..... | 3 | ..... | ..... |
| Vocational Education 103—Educational Psychology..... | ..... | 3 | ..... |
| Vocational Education 104—Observation and Methods..... | 1(3) | 1(3) | ..... |
| Vocational Education 105—Methods in Vocational Agriculture..... | ..... | ..... | 3 |
| Vocational Education 106—Observation and Methods..... | ..... | ..... | 1(3) |
| Elective..... | 4 | 4 | 6 |
| Military Instruction 103—Advanced Course..... | R | R | R |
| SENIOR YEAR. | | | |
| Rural Economics 108—Farm Accounting..... | 3(3) | ..... | ..... |
| Rural Economics 109—Farm Management..... | ..... | 3(3) | 3(3) |
| Rural Economics 107—Community Study..... | 2 | 2 | 2 |
| Vocational Education 107—Methods in Vocational Agriculture..... | (6) | (6) | ..... |
| Vocational Education 108—Supervised Teaching and Observation..... | 5 | 1(3) | 1(3) |
| Vocational Education 109—Problems in Secondary Education..... | ..... | ..... | 2 |
| Elective..... | 4 | 7 | 7 |
| Military Instruction 104—Advanced Course..... | R | R | R |

HOME ECONOMICS EDUCATION

Applicants for admission to the Home Economics Education curriculum should present, in addition to the equivalent of a high school education, evidence of having had practical experience in the home. If practical experience is not presented for entrance, it must be acquired before graduation.

The 40 hours of electives allowed by this curriculum may be selected from any of the courses offered by the College for which the student has the necessary prerequisites. In making elections students should consult the Dean of Home Economics as well as the Dean of this division.

For further description of Home Economics Education curriculum see Division of Home Economics.

TRADE AND INDUSTRIAL EDUCATION

Several types of curricula will be offered those desiring to prepare for trade and industrial teaching—namely, four-year, one-year and special evening curricula.

To enter a four-year curriculum for the training of teachers of related trade and industrial subjects, applicants must present evidence of having had the equivalent of a high school education and evidence of satisfactory contact with the trade or willingness to acquire such contact while in training. Applicants for admission to one-year curricula for the training of teachers of related industrial subjects must present evidence of having served two years in the trade, or two years in a technical school and must have a general education equivalent to three years in high school. Applicants for admission to one-year curricula for the training of shop teachers must have completed the elementary school, served an apprenticeship and at least one year as a journeyman. Applicants for admission to special evening teacher training classes must present evidence of having had two years' experience as a journeyman in the trade and evidence of having completed the equivalent of an elementary school education.

For a further description of Trade and Industrial Education curricula write for special circular.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

The Farm Management and Agricultural Economics curriculum offers opportunity to train for farm management and for special investigational work along economic lines.

The elections allowed by this curriculum may be made from any of the courses offered by the College for which the student is qualified to enroll. Students are encouraged to make elections along some particular line of agricultural production as agronomy, pomology, vegetable gardening, or animal husbandry. In making such elections students should consult the Dean in charge of the specialty as well as the Dean of this division.

FARM MANAGEMENT AND AGRICULTURAL ECONOMICS

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English 101—Composition, Rhetoric and Readings in English Prose | 3 | 3 | 3 |
| Public Speaking 101—Elements of Public Speaking | 1 | 1 | 1 |
| Chemistry 101—General Chemistry | 3(3) | 3(3) | ..... |
| Chemistry 102—The Metals and Qualitative Analysis . . . . . | ..... | ..... | 2(6) |
| Zoology 101 and 102—General Zoology | 2(6) | 2(6) | ..... |
| Botany 101—General Botany . . . . . | ..... | ..... | 2(6) |
| Vocational Education 101—Freshman Lectures | 1 | 1 | 1 |
| History 101-102-103—Industrial History, or Mathematics, or | 4 | 4 | 4 |
| Language . . . . . | ..... | ..... | ..... |
| Military Instruction 101—Basic Course | 1(2) | 1(2) | 1(2) |
| SOPHOMORE YEAR. | | | |
| Agronomy 101—Cereal Crops | 3(3) | ..... | ..... |
| Soils 101—Introductory Study of Soils . . . . . | ..... | 3(3) | ..... |
| Geology . . . . . | ..... | ..... | 3(3) |
| Botany 102—Plant Histology | 2(3) | ..... | ..... |
| Botany 103 and 104—Plant Physiology . . . . . | ..... | 2(6) | 2(6) |
| Animal Husbandry or Horticulture . . . . . | ..... | ..... | ..... |
| Military Instruction 102—Basic Course | 1(2) | 1(2) | 1(2) |
| Elective | 5 | 5 | 5 |
| JUNIOR YEAR. | | | |
| English | 2 | 2 | 2 |
| Rural Economics 101—Principles of Economics | 3 | 3 | ..... |
| Rural Economics 102—Problems in Rural Economics . . . . . | ..... | ..... | 3 |
| Soils 102 | 2(3) | ..... | ..... |
| Soils 104—Fertilizers . . . . . | ..... | ..... | 2(3) |
| Agronomy 103—Farm Crops . . . . . | ..... | ..... | 2(3) |
| Government 101 | 2 | 2 | 2 |
| Military Instruction 103—Advanced Course | R | R | R |
| Elective | 7 | 10 | 4 |
| SENIOR YEAR. | | | |
| Rural Economics 108—Farm Accounting | 3(3) | ..... | ..... |
| Rural Economics 109—Farm Management . . . . . | ..... | 3(3) | 3(3) |
| Rural Economics 107—Community Study | 2 | 2 | 2 |
| Rural Economics 104—Principles of Rural Organization | 3 | ..... | ..... |
| Rural Economics 105—Markets and the Marketing of Farm Products . . . . . | ..... | 3 | ..... |
| Rural Economics 106—Co-operative Marketing . . . . . | ..... | ..... | 3 |
| Military Instruction—Advanced Course | R | R | R |
| Elective | 8 | 8 | 8 |

DESCRIPTION OF COURSES

Agricultural Education

Voc. Ed. 101: Freshman Lectures—A general description of vocational opportunities as exemplified by the various curricula of the Maryland State College of Agriculture. This course is intended primarily to assist the student in selecting his curriculum and courses for the succeeding years.

Lecture, 1 hour; 1st, 2d and 3d terms. Credit 1.

Voc. Ed. 102: Principles of Teaching—A survey of the aims of secondary education, the nature of the high school pupil, types of learning, types of presentation, selection and organization of subject matter, supervised study, discipline and teaching ideals. Open only to juniors and seniors.

Lectures, 3 hours; 1st term. Credit 3.

Voc. Ed. 103: Educational Psychology—An intensive study of the nature of the individual, combining the important topics of both general and educational psychology, and stressing particularly the traits and characteristics of adolescence. Prereq. Voc. Ed. 102.

Lectures, 3 hours; 2d term. Credit 3.

Voc. Ed. 104: Observation and Methods*—A study of methods as exemplified in the classroom teaching of secondary teachers in Maryland and in the city of Washington. This course must parallel Voc. Ed. 102 and 103. Open only to juniors and seniors.

Lecture, 1 hour; practice, 3 hours; 1st and 2d terms. Credit 2.

Voc. Ed. 105: Methods in Vocational Agriculture—A study of the teaching of secondary vocational agricultural subjects, stressing particularly the purposes of such instruction, the selection, organization and presentation of subject matter and the organization of project activities. Prereq. Voc. Ed. 103.

Lectures, 3 hours; 3d term. Credit 3.

Voc. Ed. 106: Observation and Methods—A continuation of Voc. Ed. 104, stressing particularly methods used in the presentation of agricultural subjects in secondary schools. This course must parallel Voc. Ed. 105. Prereq. Voc. Ed. 104.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Voc. Ed. 107: Methods in Vocational Agriculture—A continuation of Voc. Ed. 105, emphasizing particularly organization of subject matter, equipment, text-books and community relationships. Prereq. Voc. Ed. 105.

Practice, 6 hours; 1st and 2d terms. Credit 2.

Voc. Ed. 108: Supervised Teaching and Observation—Each student in this course is expected to spend at least one term, five periods a week or

*Observation work is in every case in charge of the instructor offering the courses which such work parallels.

its equivalent as a junior teacher of vocational agriculture and serve as an assistant to a supervising teacher in charge of this subject in a secondary school. During the term in which the student does his supervised teaching he is expected to assume a few other obligations. During the terms in which he is not teaching the student must continue observation work and attend the conferences held for the benefit of junior teachers. Open only to seniors. Credit depends upon the amount and character of work done. An average of three hours per term for the year may be allowed.

Voc. Ed. 109: Problems in Secondary Education—A study of the problems and responsibilities of the secondary school, stressing particularly the history and development of vocational education. Prereq. Voc. Ed. 107.

Lectures, 2 hours; 3d term. Credit 2.

Graduate Work

Voc. Ed. 201: Problems in Agricultural Education—A study of historical and administrative phases of agricultural education, types of schools and systems of supervision. Credit depends upon amount and character of work done.

HOME ECONOMICS EDUCATION

Voc. Ed. 110: Methods in Home Economics Education—A study of the teaching of secondary home economic subjects, stressing particularly the purposes of such instruction and the selection, organization and presentation of subject matter. Prereq. Voc. Ed. 103.

Lectures, 3 hours; 3d term. Credit 3.

Voc. Ed. 111: Observation and Methods—A continuation of Voc. Ed. 104, stressing particularly the methods used in the presentation of home economic subjects. This course must parallel Voc. Ed. 110. Prereq. Voc. Ed. 104.

Lecture, 1 hour; practice, 3 hours; 3d term. Credit 2.

Voc. Ed. 112: Methods in Home Economics Education—A continuation of Voc. Ed. 110, emphasizing particularly organization of subject matter, equipment, text-books and community relationships. Prereq. Voc. Ed. 110.

Practice, 6 hours; 1st and 2d terms. Credit 2.

Voc. Ed. 113: Supervised Teaching and Observation—Each student in this course is expected to spend at least one term, five periods a week or its equivalent as a junior teacher in home economics and serve as an assistant to a supervising teacher in charge of this subject in a secondary school. During the term in which the student does this teaching she is expected to assume a few other obligations. During the term in which she is not teaching she must continue observation work and attend the conferences held for the benefit of junior teachers. Open only to seniors. Credit depends upon the amount of work done. An average of three hours per term for the year may be allowed.

GOVERNMENT

Gov. 101: Federal, State and Municipal Government—This course deals with institutions and functions of the State and is adapted to the needs of those desiring to gain an insight into the responsibilities of citizenship.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Gov. 102: Business Law—This course deals with the common legal aspects of ordinary business transactions and is planned to give to the student a sense of the occasions when he should consult a lawyer for guidance to avoid making legal mistakes, rather than any feeling that he is competent to dispense with legal advice.

Lectures and recitations, 2 hours; 1st and 2d terms. Credit 4.

Gov. 103: Public Finance—This course is complimentary to the study of government and deals with the revenue and budgetary systems of public bodies—Federal, State and local.

Lectures and recitations, 2 hours; 1st and 2d terms. Credit 4.

Gov. 104: Law of Contracts and Specifications—A course in business law arranged for students in engineering, dealing primarily with covenants and specifications.

Lectures and recitations, 2 hours; 2d and 3d terms. Credit 4.

Gov. 1: Federal, State and Municipal Government—A course parallel with Gov. 101, arranged for students in the two-year agricultural course.

Lectures and recitations, 3 hours; 1st term.

Gov. 2: Business Law—A course parallel with Gov. 102 arranged for students in the two-year agricultural course.

Lectures and recitations, 3 hours; 2d term.

HISTORY

Hist. 101: European Industrial History—This course deals with a study of the economic and social causes underlying the "break up" of the Roman Empire and the succeeding industrial changes to 1776, stressing particularly the rise of England as an industrial nation.

Lectures and recitations, 4 hours; 1st term. Credit 4.

Hist. 102: Industrial and Economic History of the United States—A study of the industrial and economic development of the United States from the Colonial period to 1861.

Lectures and recitations, 4 hours; 2d term. Credit 4.

Hist. 103: Comparative Industrial and Economic History—A study of the industrial development of the leading nations of the world from 1861 to the present time.

Lectures and recitations, 4 hours; 3d term. Credit 4.

Hist. 104: Studies in Modern and Contemporary History—A course dealing with the history of modern States from 1850 to the present time.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 2.

Hist. 105: History of Agriculture—A course dealing with the development of farming as an industry from the period of origin to the period of skill and scientific management.

Lectures and recitations, 3 hours; 2d term. Credit 3.

RURAL ECONOMICS

R. Ec. 101: Principles of Economics—A basal course embracing a study of the economic principles underlying the phenomena of consumption, production, distribution, co-operation and business organization.

Lectures, 3 hours; 1st and 2d terms. Credit 3.

R. Ec. 102: Problems in Rural Economics—A study of the economic adaptations and adjustment necessary on the part of the agriculturist to meet the changing economic conditions. Population flows, land tenure, farm incomes, farm labor, agricultural credit and price movements will receive special consideration. Prereq. R. Ec. 101.

Lectures and recitations, 3 hours; 3d term. Credit 3.

R. Ec. 103: Elements of Community Study—A course dealing with the fundamental principles of community development.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 2.

R. Ec. 104: Principles of Rural Organization—A study of the historical and comparative development of farmers' co-operative organizations, stressing particularly present tendencies.

Lectures and recitations, 3 hours; 1st term. Credit 3.

R. Ec. 105: Markets and the Marketing of Farm Products—An analysis of the present system of transporting, storing and distributing farm products as a basis for intelligent direction of effort in increasing the efficiency of marketing methods. Prereq. R. Ec. 101.

Lectures and recitations, 3 hours; 2d term. Credit 3.

R. Ec. 106: Co-operative Marketing—A study of the co-operative marketing, endeavors of farmers with a view to developing methods of distributing perishable and specialized farm products. Prereq. R. Ec. 101 and R. Ec. 105.

Lectures and recitations, 3 hours; 3d term. Credit 3.

R. Ec. 107: Community Study—A course dealing with a study of the history and structure of rural communities, stressing particularly relationships and needs.

Lectures and recitations, 2 hours; 1st, 2d and 3d terms. Credit 2.

R. Ec. 108: Farm Accounting—A study of the principles underlying farm accounting, emphasizing cost accounting and analysis of farm business.

Lectures and recitations, 3 hours; practice, 3 hours; 1st term. Credit 4.

R. Ec. 109: Farm Management—A study of the business of farming from the standpoint of the individual farmer. This course aims to connect the principles and practice which the student has acquired in the

several technical courses and to apply them to the development of a successful farm business.

Lectures and recitations, 3 hours; practice, 3 hours; 2d and 3d terms. Credit 4.

R. Ec. 1: Farm Management—A course parallel with R. Ec. 109 arranged for students in the two-year agricultural curriculum.

Lectures and recitations, 2 hours; practice, 2 hours; 1st term.

R. Ec. 2: Farm Accounting—A course parallel with R. Ec. 108 arranged for students in the two-year agricultural curriculum.

Lectures and recitations, 2 hours; 2d term.

R. Ec. 3: Rural Organization—A survey of the functions, scope and present forms of organization of rural interests primarily for economic purposes.

Lectures and recitations, 2 hours; 3d term.

SUPERVISED TEACHING

The supervised teaching required in courses numbered Vocational Education 108 and Vocational Education 111 is in charge of the individual at the head of this department, supervising teachers, professors of special methods in vocational agriculture and home economics and the principal in charge of the high school in which such work is conducted.

It is the duty of the head of the department of supervised teaching to arrange in consultation with the supervising teachers and the principal the details involved in the administration of the practical work of students engaged as junior teachers, assume responsibility for the prompt fulfillment of duties on the part of a student acting in such capacity, and safeguard the interests of such students as individuals engaged in training for a State teacher's certificate. It is the duty of a supervising teacher to assume entire responsibility for the instruction of the pupils enrolled in the secondary courses for which he is responsible, supervise the lesson plans and classroom teaching of the junior teachers under him, and assist in every way possible in the training and development of students in such service. It is the duty of a professor of special methods to keep in close touch with the work of the supervising teachers in his field, study the development of students as junior teachers and assist supervising teachers in their work with such

students. It is the duty of the principal to maintain the school as a school, safeguard the interests of the pupils and endeavor to develop within the school the best that modern secondary education has to offer.

The first aim of the courses in supervised teaching is to acquaint the student with the professional relations that ought to be considered in connection with the teaching of any subject in a high school. Plans are prepared for subsequent work in the classes of supervising teachers. Students failing during their regular period of supervised teaching to display essential qualifications for teaching are required to extend their periods of preparation under such arrangements as can be made for each individual case.

Note—Use of terms.

Pupil refers to one who has matriculated in a high school in which supervised teaching is done.

Student refers to the college student in training for a State teacher's certificate.

Teacher refers to any person regularly teaching in a high school. Teachers may be of two classes—supervising and junior. A supervising teacher is an individual having entire charge of a secondary course in which students may be enrolled for supervised teaching. A junior teacher is a student who acts as an assistant to a supervising teacher and is enrolled for supervised teaching.

Professor of Special Methods refers to a professor of special professional courses in education, as Professor of Agricultural Education, Professor of Home Economics Education, etc.

Principal refers to the principal of the high school in which supervised teaching is done.

Division of Home Economics

ANNOUNCEMENT

A recent act of the Maryland Legislature made possible the establishment of the Division of Home Economics. This division will be able to enroll a limited number of students by October 1, 1918. As this catalogue goes to press but few of the instructors have been selected for the work. Sufficient basic courses, however, are outlined to enable prospective students and their agents to gain an idea of the character of the instruction which the College proposes to inaugurate.

FOREWORD

The Division of Home Economics offers opportunity to prepare for home making and home economics teaching. The courses given will include fundamental training which will enable the student to prepare for such professional service as interior decorating, dressmaking, millinery and managing or serving as a dietitian in a private home, institutional household, hospital, school or college dormitory with a small amount of specialized training. On account of the demand for trained teachers of home economics and the limited dormitory space, students will be accepted only in the curriculum preparing for teaching. This curriculum is offered in co-operation with the Division of Vocational Education.

HOME ECONOMICS EDUCATION

The special entrance requirements of the Home Economics Education curriculum are stated in the description of this curriculum under the Division of Vocational Education.

HOME ECONOMICS EDUCATION

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| | I | II | III |
| FRESHMAN YEAR. | | | |
| English..... | 3 | 3 | ..... |
| Public Spaking..... | 1 | 1 | 1 |
| Chemistry..... | 3(3) | 3(3) | 2(6) |
| Zoology 101 and 102—General Zoology..... | 2(6) | 2(6) | ..... |
| Botany 101—General Botany..... | ..... | ..... | 2(6) |
| Vocational Education 101—Freshman Lectures..... | 1 | 1 | 1 |
| Home Economics 101—Drawing and Design..... | 4 | ..... | ..... |
| Home Economics 102—Textiles..... | ..... | 4 | ..... |
| Home Economics 103—Elementary Dressmaking..... | ..... | ..... | 4 |
| Physical Training..... | 1 | 1 | 1 |
| SOPHOMORE YEAR. | | | |
| Organic Chemistry..... | 4 | ..... | ..... |
| Physiology..... | 4 | ..... | ..... |
| Bacteriology and Public Health..... | ..... | 4 | 4 |
| Elements of Community Study..... | 2 | 2 | 2 |
| Home Economics 104—Food Study and Cooking..... | 4 | 4 | ..... |
| Home Economics 105—Dressmaking..... | ..... | 4 | ..... |
| Home Economics 106—Dietetics..... | ..... | ..... | 4 |
| Physical Training..... | 1 | 1 | 1 |
| Elective..... | 3 | 3 | 7 |
| JUNIOR YEAR. | | | |
| English..... | 2 | 2 | 2 |
| Home Economics 107—Advanced Design..... | 2 | 2 | ..... |
| Home Economics 108—Home Care of the Sick..... | 2 | ..... | ..... |
| Home Economics 109—Nutrition..... | ..... | 5 | 5 |
| Vocational Education 102—Principles of Teaching..... | 3 | ..... | ..... |
| Vocational Education 103—Educational Psychology..... | ..... | 3 | ..... |
| Vocational Education 104—Observation and Methods..... | 1(3) | 1(3) | ..... |
| Vocational Education 110—Methods in Home Economics..... | ..... | ..... | 3 |
| Vocational Education 111—Observation and Methods..... | ..... | ..... | 1(3) |
| Elective..... | 6 | 3 | 5 |
| SENIOR YEAR. | | | |
| Rural Economics 101—Principles of Economics..... | 3 | 3 | ..... |
| Home Economics 110—Clothing..... | ..... | 3 | 3 |
| Home Economics 111—Home Equipment..... | 3 | 3 | ..... |
| Home Economics 112—Home Management..... | ..... | ..... | 5 |
| Vocational Education 112—Methods in Home Economics Education..... | (6) | (6) | ..... |
| Vocational Education 113—Supervised Teaching and Observation..... | 5 | 1(3) | 1(3) |
| Vocational Education 109—Problems in Secondary Education..... | ..... | ..... | 2 |
| Elective..... | 4 | 4 | 5 |

DESCRIPTION OF COURSES

H. Ec. 101: Drawing and Design—A study of the principles of design as applied to clothing and house furnishing.

First term. Credit 4.

H. Ec. 102: Textiles—A study of the structure and properties of textiles and fabrics and their use in clothing and household furnishings.

Second term. Credit 4.

H. Ec. 103-c: Dressmaking—A course giving practice in the cutting and making of simple garments and dresses from washable materials.

Third term. Credit 4.

H. Ec. 104-a-b: Food Study, Cookery and Elementary Dietetics—A course including a study of food principles in relation to their composition, sources, and value in the body; of dietaries; cost in relation to the family budget; and practice in preparation and serving of meals.

First and second terms. Credit 4.

H. Ec. 105: Dressmaking—This course includes a study of quality, suitability, and cost of materials and practice in constructing simple wool and silk dresses.

Second term. Credit 4.

H. Ec. 106: Dietetics—A study of the fundamental principles of human nutrition and the application of these principles to the feeding of individuals, families, and larger groups under varying physiological and economic conditions.

Third term. Credit 4.

H. Ec. 107: Advanced Design—A study of the development of art and ornament in relation to modern styles in articles of clothing and house furnishings, so treated that students may recognize what is appropriate and beautiful.

First and second terms. Credit 2.

H. Ec. 108: Home Care of the Sick—A study of the transmission and prevention of communicable diseases; first aid; hygiene of infancy; maidenhood, maturity; and home nursing.

First term. Credit 2.

H. Ec. 109: Nutrition—A physiological and chemical study of human nutrition.

Second and third terms. Credit 5.

H. Ec. 110: Clothing—A study of family clothing problems, stressing particularly needs and cost in relation to the clothing budget. Problems in modeling and construction.

Second and third terms. Credit 3.

H. Ec. 111: Home Equipment—A study of house sites; architecture; floor plans, building materials; details of construction; heating plants, ventilation, lighting, plumbing; water supply, furniture, pictures, and hangings from the point of view of the home-maker with various sums at her command.

First and second terms. Credit 3.

H. Ec. 112: Home Management—A course including instruction in family budget making, for varying incomes and for larger groups; household accounts; and practice as manager and helper in a household.

Third term. Credit 5.

For description of home economics education courses see Division of Vocational Education.

Division of Language and Literature

OFFICERS OF INSTRUCTION

- T. H. SPENCE.....Dean of Division and Professor of Modern Language.
C. S. RICHARDSON.....Professor of English and Public Speaking.
P. I. REED.....Professor of English Literature.
C. F. KRAMER, JR.....Instructor in Modern Language.

INTRODUCTION

Instruction in the English language and literature is indispensable to complete training. There is no more practical branch of study than that which teaches the student to avoid the ordinary errors, to regard the laws of correct usage and good taste, and to express his thoughts in a clear, easy and effective manner. This can be accomplished only by systematic instruction which stresses precept, practice and example. Consequently, all composition courses prescribe, in addition to rhetorical theory, extensive writing of themes and constant attention to the methods of the masters of English prose.

Training, however, is not complete without some knowledge of the noblest thoughts of the greatest minds. These are preserved in the masterpieces of literature. To study the classics is to come under their influence; hence a survey of English literature permits acquaintance with and inculcates habits of sound and painstaking scholarship.

MODERN LANGUAGE

This department embraces the study of three branches—French, German and Spanish. Instruction is open to students for one, two or three years. The work offered is similar to that of the more advanced agricultural colleges, and when certified by this department is accepted at full credit by the larger universities of the country.

The instruction in French and German is intended—first, to enable students who expect to engage in investigation to translate and to understand foreign scientific contributions which have not been rendered into English; second, to foster and to train the mind for accurate and logical methods of reasoning; and third, to clarify and simplify technical and applied English, giving the student a more thorough and comprehensive appreciation of his own language.

The recent political and commercial history of our country has caused a knowledge of the Spanish language to be wholly desirable. Consequently the instruction given herein is practical, laying the foundations for the spoken and written use of the language.

DESCRIPTION OF SUBJECTS OFFERED

For convenience and ease in reference, the instruction is arranged alphabetically.

ENGLISH COMPOSITION

Eng. 101: Composition, Rhetoric and Readings in English Prose—This course aims to train the student in clear, economic, forceful thought-transmission. Constant application of the principles of good writing in constructive composition is required. Daily exercises and twelve essays are written during the year.

Recitations, 3 hours; practice, 1 hour; 1st, 2d and 3d terms. Credit 10.

Eng. 102: Advanced Composition—Research work and practical composition on general and technical subjects.

Recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Eng. 103: Technical and Advanced General Composition—Writing for newspapers and magazines. Commercial correspondence. Bulletin writing. The technical departments of the College co-operate with the English department in offering this course. Required of all students other than engineers.

Practice, 1 hour; 1st, 2d and 3d terms. Credit 3.

Eng. 104: Lectures on Technical Composition—Practice in technical composition. Criticism and correction of compositions in the classroom. This course is entirely practical. Required of all engineering students.

Practice, 2 hours; 1st, 2d and 3d terms. Credit 2.

Eng. 105: Advanced Lectures on Technical Composition—Theme subjects are offered by the department in which the student's major work

is done. The larger portion of the work is done in the classroom. Required of all engineering students. Elective for non-engineers.

Practice, 2 hours; 1st, 2d and 3d terms. Credit 2.

Eng. 1: Rhetoric and Composition—A study of the principles of rhetoric and composition, especially adapted to the needs of the students in the practical courses. A thorough study is made of the business letter, the newspaper report, and the advertisement; all of which are illustrated by models taken from the best current literature.

Lectures and recitations, 2 hours, 1st and 3d terms; 3 hours, 2d term.

Eng. 2: Farm Literature—A comprehensive study of the farm magazine; Federal and State Experiment Station bulletins; reports of agricultural associations, granges and agricultural colleges. The object is to make the student familiar with the literature of his vocation. The student is encouraged to secure for himself a working library. Frequent visits to the College Library and to the Library of Congress serve to familiarize the student with the practical workings of the modern library.

Practice, 2 hours; 1st, 2d and 3d terms.

Eng. 3: Technical Literature—This course is a continuation of Eng. 1 and 2, with special emphasis upon the technical literature of the science of farming.

Lectures and recitations, 2 hours; 1st and 2d terms.

Eng. 4: English—Review of grammar and composition based upon work taken in the mechanic arts course.

Recitations, 3 hours; 1st, 2d and 3d terms.

Eng. 5: English and Themes—A reading course in engineering periodicals and theme writing relative to engineering subjects.

Recitations, 4 hours; 3d term.

ENGLISH LITERATURE

Eng. Lit. 101: A Survey of English Literature—A general survey by types of the development of English literature. Historical outline given by lectures. Intensive study in class of representative masterpieces of each type. Collateral readings. Elective.

Recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Eng. Lit. 102: The Novel and the Essay—Each student will read a number of works of fiction and prepare written critiques. A few model novels are studied critically in the class. Lectures on the historical development of the English novel. Reading of the leading nineteenth century essayists; lectures and reports. Elective.

Recitations, 2 hours; 1st, 2d and 3d terms. Credit 6.

Eng. Lit. 103: The Drama—The origin of the English drama; early popular plays; predecessors of Shakespeare; Shakespeare and his contemporaries; the Restoration and eighteenth century drama; the modern drama. Lectures on the history, and the critical study of the plays of each period. Extensive collateral reading. Elective.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 6.

FRENCH

Fr. 101: Elementary French—Drill in pronunciation, elements of grammar, conversation, simple composition, reading, and translation.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 12.

Fr. 102: Second-Year French—Grammar continued. Drill on pronouns and irregular verbs. Composition, dictation, conversation, sight-reading and translation. Prereq. Fr. 101.

Recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Fr. 103: Advanced French—Reading and translation of scientific texts and periodicals. Original and dictated reproductions of the texts. Prereq. Fr. 102.

Recitations, 3 hours; 1st, 2d and 3d terms.

Fr. 104: Double French—A combination of Fr. 101 and Fr. 102. Drill upon the essentials of grammar. Oral exercises and composition. Study of texts from the very beginning of the course. Practice in translation at sight. Much attention is given to the use of good English in the translation.

Recitations, 5 hours; 1st, 2d and 3d terms. Credit 15.

GERMAN

Ger. 101: Beginning German—Drill on pronunciation, elements of grammar, conversation, dictation, reading, and translation.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 12.

Ger. 102: Second-Year German—Grammar continued. Drill in prose composition, reproduction, and conversation. Sight-reading and translation. Prereq. Ger. 101.

Recitation, 3 hours; 1st, 2d and 3d terms. Credit 9.

Ger. 103: Third-Year German—Reading and translation of scientific texts and periodicals. Prepared and extemporary reproductions of the text. Prereq. Ger. 102.

Recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Ger. 104: Double German—A combination of Ger. 101 and Ger. 102. Drill upon the foundations of grammar. Conversation and written composition. Early reading of texts. Sight-reading. Oral and written reproductions.

Recitations, 5 hours; 1st, 2d and 3d terms. Credit 15.

PUBLIC SPEAKING

P. S. 101: Elements of Public Speaking—Reading, declamation, original speeches, debates.

Practice, 2 hours; 1st, 2d and 3d terms. Credit 2.

P. S. 102: Public Speaking—Realization and expression of thought. The art of debate. Original speeches on general and technical subjects.

Recitation, 1 hour; 1st, 2d and 3d terms. Credit 3.

P. S. 103: Advanced Public Speaking—Preparation and delivery of speeches on general and technical subjects. Argumentation and formal debate. Required of all students other than engineers.

Recitation, 1 hour; 1st, 2d and 3d terms. Credit 3.

P. S. 104: Technical Public Speaking—Preparation and delivery of speeches on technical subjects; the subjects being offered by the Division of Engineering. Required of engineering students.

Practice, 1 hour; 1st, 2d and 3d terms. Credit 1.

P. S. 105: General Advanced Public Speaking—Continuation of P. S. 103 and P. S. 104. Elective.

Recitation, 1 hour; 1st, 2d and 3d terms. Credit 3.

P. S. 106: Advanced Technical Public Speaking—Continuation of P. S. 104. Required of engineering students.

Practice, 1 hour; 1st, 2d and 3d terms. Credit 1.

SPANISH

Sp. 101: Elementary Spanish—Drill in the elements of Spanish grammar, pronunciation, simple composition, reading, and translation.

Recitations, 4 hours; 1st, 2d and 3d terms. Credit 12.

Sp. 102: Second-Year Spanish—Grammar, conversation, composition continued. Reading and translation. Prereq. Sp. 101.

Recitations, 3 hours; 1st, 2d and 3d terms. Credit 9.

Sp. 103: Double Spanish—A combination of Sp. 101 and Sp. 102. Drill upon the elements of grammar. Oral exercises and written composition. Study of texts from the beginning of the course. Practice in reading and translation at sight. Conversation. Reproductions from texts read.

Recitations, 5 hours; 1st, 2d and 3d terms. Credit 15.

TWO-YEAR COURSE IN ENGINEERING

The object of the course is to prepare men for positions of responsibility in lines of work in which training in mechanic arts is necessary. There is a special need for such men at all times and particularly in time of war. The course affords an excellent opportunity for training to such persons as find it impossible for any reason to enter any of the four-year courses in Engineering. A certificate is granted to each student who satisfactorily completes the course. The first year of the course is devoted to the laying of a foundation in shop mathematics, physics and English, as well as in drawing and shop work. In the second year most of the time is devoted to subjects closely related to mechanical and electrical engineering,

the student selecting the branch in which he thinks he may use his talents to the greatest advantage.

Throughout the course emphasis is laid on the necessity for turning out work in the drafting room, shop and field which will meet the requirements of the commercial work. The student is taught that a task worth doing at all is worth doing well and that the finished product from the hand, brains, or both, must not only pass inspection, but be better than the average if one wishes to succeed. Parallel with the practical work instruction is given in the fundamentals upon which practice is based. Thus the head and hand are brought into that intimate and harmonious relation so necessary to the normal development of the individual engaged in any industrial pursuit.

Among the positions which the course equips a man to fill may be noted the following: Tracers, draftsmen, linemen, station operators, assistants in various branches related to engineering, salesmen for different kinds of machinery, and assistant foremen.

To enter the course a student must have completed at least the equivalent of the seventh grade in the Maryland public schools and be not less than 16 years of age.

The tabulated curriculum of the course follows. It gives the outline of the work in both its mechanical and electrical aspects:

TWO-YEAR ENGINEERING

| SUBJECT. | TERM. | | |
|---|-------|------|------|
| | I | II | III |
| FIRST YEAR. | | | |
| Mathematics 1, 2 and 3—Shop Mathematics..... | 4 | 4 | 3 |
| Physics 1—Elementary Physics..... | 3(3) | 3(3) | 3(3) |
| English 4..... | 3 | 3 | 3 |
| Mechanical Engineering 3—Technical Instruction..... | 2 | 2 | 2 |
| Drawing 2—Mechanical Drawing..... | (6) | (6) | (6) |
| *Drawing 3—Freehand Drawing..... | | | (6) |
| Shop 3—Carpentry..... | (6) | | |
| Shop 4—Advanced Wood Work..... | | | (3) |
| Shop 5—Blacksmithing..... | | (6) | |
| *Shop 6—Foundry..... | | | (6) |
| Military Instruction 101—Basic Course..... | 1(2) | 1(2) | 1(2) |

SECOND YEAR.

| | | | |
|--|------|------|------|
| Mathematics 4 and 5—Shop Mathematics..... | 4 | 4 | |
| Military Instruction 102—Basic Course..... | 1(2) | 1(2) | 1(2) |

OPTION IN MECHANICS.

| | | | |
|---|-----|------|-----|
| Mathematics 6—Estimates and Costs..... | | | 4 |
| English 3—English and Themes..... | | | 3 |
| Mechanical Engineering 4—Heat Engines..... | 4 | | |
| Mechanical Engineering 5—Technical Mechanics..... | 4 | 4 | 4 |
| Electrical Engineering 2—Direct Current..... | | 3(3) | |
| Shop 7 and 8—Machine Work..... | (6) | (9) | |
| Shop 9—Shop Work..... | | | (9) |
| Machine Design 1—Machine Drafting..... | (6) | (6) | (6) |
| Experimental Laboratory 1..... | | | 3 |
| Mechanical Engineering 6—Power Plant Operation..... | (3) | | |

OPTION IN ELECTRICITY.

| | | | |
|---|------|------|------|
| Electrical Engineering 1—Direct Current..... | 2(3) | 2(3) | |
| Electrical Engineering 2—Alternating Currents..... | | | 4(3) |
| Electrical Engineering 4—Illuminations..... | | 2(3) | |
| Electrical Engineering 5—Power Plants..... | | 2 | 2 |
| Electrical Engineering 6—Telephones and Telegraphs..... | | | 3(3) |
| Electrical Engineering 7—Batteries..... | 2(3) | | |
| Electrical Engineering 8—Measuring Instruments..... | 2(3) | | |
| Electrical Engineering 9—Equipment Repairs..... | | 1(3) | |
| Electrical Engineering 10—Switchboards..... | | | 2 |
| Electrical Engineering 11—Interior Wiring..... | 2(6) | 2(3) | |
| Electrical Engineering 12—Outside Lines..... | | | 1(6) |
| Shop 10—Machine Work..... | | | (3) |

*Students electing option in mechanics take foundry; others take freehand drawing.

TWO-YEAR AGRICULTURAL COURSE

The Two-Year Agricultural Course embraces much of the technical work of the four-year courses and is designed to lay a foundation that will secure success in practical farming. It is planned especially to meet the demands of young men who cannot find time to take the regular courses of the College, or for those who have not had the necessary educational requirements for admission to the longer courses.

Among the most enthusiastic students who have taken the course and give it their hearty endorsement are some of the landowners and best farmers of Maryland. The course is made practical in every sense of the word, and for that reason students having farm experience before entering will derive most benefit from the work. Those taking the course who do not live on home farms are required to spend at least ten weeks between the first and second years on a farm approved by the College.

It is advisable for students to carry on project work where possible. College authorities are always available to supervise such projects, and when satisfactorily carried out credit may be given for the work. Look for a list of projects under the Short Course in Agricultural Practice.

The two-year course has the advantage of being given during the same months that the regular College courses are given. The students can enter into all phases of athletics and other student activities.

To enter the two-year course the applicant must have preparation at least equal to the work given in the seventh grade of the Maryland public schools.

At the conclusion of the course students having completed the regular work as outlined are given a certificate stating the studies pursued during the time spent in the College.

OUTLINE OF COURSES

| SUBJECT. | TERM. | | |
|---|-------|-------|-------|
| FIRST YEAR. | I | II | III |
| Agronomy 1—Cereal Crops..... | 2(2) | ..... | ..... |
| Agronomy 2—Forage Crops..... | ..... | ..... | 2(2) |
| Soils 1—General Soils..... | ..... | ..... | 2(2) |
| Animal Husbandry 1—Breeds and Judging Live Stock..... | 2(2) | ..... | ..... |
| Animal Husbandry 2—Dairying..... | ..... | 2(2) | ..... |
| Animal Husbandry 3—Feeds and Feeding..... | ..... | ..... | 2(2) |
| Chemistry 1—Agricultural Chemistry..... | 2(3) | 3(3) | ..... |
| Pomology 1—Elementary Pomology..... | 2(2) | ..... | ..... |
| Landscape and Floriculture 1—Plant Propagation..... | ..... | 1(2) | ..... |
| Vegetable Gardening 1—Home Vegetable Gardening..... | ..... | 1(2) | 2(2) |
| Botany 1—General Botany..... | 2(2) | ..... | ..... |
| Zoology 1—Entomology..... | ..... | 2(2) | ..... |
| Zoology 2—Sprays and Spraying..... | ..... | ..... | 2(3) |
| Drawing 1—Farm Drawing..... | (3) | ..... | ..... |
| Shop 1—Farm Wood Work..... | ..... | (3) | ..... |
| Shop 2—Forging and Pipe Fitting..... | ..... | ..... | (3) |
| English 1—Composition..... | 2 | 3 | 2 |
| English 2—Farm Literature..... | (2) | (2) | (2) |
| Military Instruction..... | 1(2) | 1(2) | 1(2) |

SECOND YEAR.

| | | | |
|---|-------|-------|-------|
| Agronomy 3—Grain Judging..... | ..... | (2) | ..... |
| Animal Husbandry 4—Breeding of Animals..... | 2 | ..... | ..... |
| Animal Husbandry 5—Disease of Animals..... | ..... | 2(2) | ..... |
| Animal Husbandry 6—Farm Poultry..... | ..... | ..... | 2(3) |
| Economics 1—Farm Management..... | 2(2) | ..... | ..... |
| Economics 2—Farm Accounts..... | ..... | 2 | ..... |
| Economics 3—Rural Organization..... | ..... | ..... | 2 |
| Economics 4—Business Law..... | ..... | 3 | ..... |
| Soils 2—Fertilizers..... | 2(2) | ..... | ..... |
| Botany 2—Plant Diseases..... | 2(2) | ..... | ..... |
| General Science 1—Bacteriology..... | ..... | 1(3) | ..... |
| Forestry 1—Farm Forestry..... | ..... | ..... | 2(3) |
| Structural Design 1—Farm Buildings..... | 1(3) | ..... | ..... |
| Mechanical Engineering 1—Farm Machinery..... | ..... | 1(3) | ..... |
| Hydraulics 1—Drainage..... | ..... | ..... | 2(6) |
| English 3..... | 2 | 2 | 2 |
| Military Instruction..... | 1(2) | 1(2) | 1(2) |
| Elect one or a portion of each: | | | |
| Agronomy 4—Advanced Agronomy..... | 2(4) | 2(3) | 3(4) |
| Animal Husbandry 7—Animal Industry..... | 2(4) | 2(3) | 3(4) |
| Horticulture—Vegetable Gardening 5 or Pomology 2 or Floriculture .. | 2(4) | 2(3) | 3(4) |
| Mechanical Engineering 2—Gas Engines..... | ..... | ..... | 2(3) |
| Zoology 3—Beekeeping..... | ..... | ..... | (3) |

SHORT COURSE IN AGRICULTURAL PRACTICE

(Three Years of Three Months Each—December, January and February)

There has been a long-felt need for an agricultural course for the rural men and women that will not take them away from the farm during the greater part of the growing season. There never has been a time when it is more necessary that the

farmers of this country produce maximum crops. For these reasons a new course in Agriculture has been initiated which will take the farmer away from his home work only three winter months—December, January and February—when he is least needed on the farm.

The short course is organized entirely from the practical point of view. The content embodied deals largely with farm-crop production, vegetable gardening, pomology, animal industry and mechanics. The methods employed show the new ways of handling old problems and the best ways to increase production with the least possible expense.

This course should appeal to men who are actually up and doing and who want to render greater service to their country by preparing to meet new conditions on the farm. It should make farm life more interesting, pleasant and profitable. One big feature is that this course affords an opportunity to come shoulder to shoulder with a multitude of splendid young men of Maryland and other States.

Although this course has hardly been announced as yet, several students have already registered for the work. The only requirement for admission is a common school education. A high school education will be very helpful, and the course is planned so that it is elastic enough to fit students with various degrees of training.

Permission is given for students to elect largely subjects pertaining to their own interest. If the plan outlined is followed, all students will take the general work during the first year and then elect their special work during the second and third years. Each year should make a unit so that a student who can attend only one or two years will still have a rounded course. Special supervised project work is offered for all who want to keep in touch with the College during the summer.

At the suggestion of students, college specialists go to the home farms to ascertain what the greatest difficulties are and then lay plans for the correction. A list of projects to select from is given elsewhere.

Students who have completed the regular work as outlined and have carried supervised project work through two sum-

mers are given a certificate stating the studies pursued while registered at the College.

Registration for this course will take place on Monday, December 2. The term will close on Friday, February 28. Those who expect to attend should request the authorities to send registration blanks as early in the year as possible.

OUTLINE OF COURSES

FIRST YEAR.

| | |
|--|------|
| Agronomy 1 and 3—Cereal Crop Production and Grain Judging..... | 2(2) |
| Animal Husbandry 1—Breeds and Judging of Live Stock..... | 2(2) |
| Animal Husbandry 2—Dairying..... | 2(2) |
| Vegetable Gardening 1—Home Vegetable Gardening..... | 2(2) |
| Pomology 1..... | 2(2) |
| Shop 1 and 2—Wood Work, Forging and Pipe Fitting..... | (3) |
| Supervised Farm Project for Summer Months. | |
| Elective (elect one): | |
| Chemistry 1—Agricultural Chemistry..... | 2(2) |
| English 1 and 2—Composition and Farm Literature..... | 3 |

SECOND YEAR.

| | |
|---|------|
| Agronomy 2—Forage Crops..... | 2(2) |
| Animal Husbandry 3—Feeds and Feeding of Live Stock..... | 2(2) |
| Mechanical Engineering 1—Farm Machinery..... | 1(3) |
| Zoology 2—Sprays and Spraying..... | 1(2) |
| Soils 2—Fertilizers..... | 2 |
| Economics 2—Farm Accounts..... | 2 |
| Supervised Farm Project During Summer Months. | |
| Elective (elect enough to make a normal schedule): | |
| Botany 2—Plant Diseases..... | 1(2) |
| Zoology 1—Entomology..... | 1(2) |
| Vegetable Gardening 2—Commercial Vegetable Gardening..... | 2(2) |
| Pomology 2—Practical Fruit Growing..... | 2(2) |
| Animal Husbandry 6—Farm Poultry..... | 2(2) |
| Rural Economics 4—Business Law..... | 2 |
| Soils 1—General Soils..... | 2(2) |

THIRD YEAR.

| | |
|---|------|
| Animal Husbandry 5—Animal Diseases..... | 2 |
| Rural Economics 1—Farm Management..... | 2(2) |
| Hydraulics 1—Drainage..... | (3) |
| Rural Economics 3—Rural Organization..... | 2 |
| General Science 1—Bacteriology..... | 1(3) |
| Elective (elect enough to make a normal schedule): | |
| Agronomy 4—Advanced Agronomy..... | 3(4) |
| Animal Husbandry 7—Animal Industry..... | 3(4) |
| Vegetable Gardening 5—Advanced Vegetable Gardening..... | 3(4) |
| Pomology 2—Practical Fruit Growing..... | 3(4) |
| Mechanical Engineering 3—Gas Engines..... | 2(3) |
| Structural Design 1—Farm Buildings..... | 1(3) |
| Zoology 3—Bee keeping..... | (3) |

FARM PROJECTS

To entirely satisfy the requirements of the Short Course in Agricultural Practice, students who are working for certificates are required to carry out farm projects between the first and second years and between the second and third years.

Students are at liberty to invite College specialists to their home farms to point out the difficulties which may be used as farm projects, or they may select a project from the list.

The work will be supervised and inspected by the department in which the project has been chosen. The following are projects submitted by the various departments:

FIELD CROPS

1. Field selection of seed corn.
2. Ear-to-row test of corn.
3. Variety test of corn.
4. Methods of cultivating corn.
5. Rate and date of planting corn.
6. Variety tests of wheat.
7. Rate and date of seeding wheat.
8. Inoculation tests for legumes.
9. Effect of lime on legumes.
10. Time of harvesting alfalfa.
11. Effect of legumes upon succeeding crops.
12. Collection and identification of tame and wild grasses and weeds and noting their commercial value or detriment.
13. Effect of fertilizers upon common crops.
14. A survey of the home farm from the standpoint of soil texture, drainage, and productivity of the various soil types.
15. Preparation of seed bed.

HORTICULTURE

1. Thinning apples.
2. Fertilizers for apple orchards.
3. Controlling diseases of orchards.
4. Making old orchards productive.
5. The pruning of fruit trees.
6. Cultural methods and disease and insect ravages.
7. Do strawberries pay as a commercial crop?
8. The cost of disease and insect control in orchards.
9. Ideal home vegetable gardening.

10. Potato culture.
11. Varieties of tomatoes.
12. Spray tomatoes *vs.* non-sprayed.
13. Beautifying the home grounds.

ANIMAL HUSBANDRY

1. Hog feeding.
2. District survey of pure bred stock.
3. Cost of feeding dairy cattle.
4. Sheep management.
5. Rationing work horses.
6. Cost of fattening cattle.
7. Selling of cream *vs.* home butter making.
8. Liberal feeding *vs.* conservation feeding of dairy cattle.
9. Profits from improved rations.
10. Profitable methods of feeding dairy calves.
11. Home cheese making.
12. The most profitable poultry flock.
13. Feeding for egg production.
14. Feeding and milking records of dairy cattle.
15. Cost of feeding horses.
16. Lamb raising.

FARM FORESTRY

1. Survey of wood lots.
2. Planting trees for farm use.
3. Germination of seeds of forest trees.
4. Rate of growth of trees.
5. Diseases of wood lots.

RURAL ECONOMICS

1. Types of farming.
2. Methods of operating farm lands.
3. A system of farm accounting and records.
4. Relation of farm equipment to the size of the farm.
5. Survey of farm practices.
6. Rural organization.

AGRICULTURAL ENGINEERING

1. Design and construction of farm buildings.
2. Laying out and installing a drainage system.
3. The draft of farm implements.
4. Design and installation of modern farm home conveniences.
5. The use and handling of cement and concrete.

DEGREES CONFERRED MAY 30, 1917

HONORARY

DOCTOR OF SCIENCE

WILLIAM W. SKINNER.....Montgomery County, Md.
H. G. SHIRLEY.....Baltimore County, Md.

MASTER OF SCIENCE

JAMES JESSIE THOMAS GRAHAM.....Prince George's County, Md.
HARLEY D. DRAKE.....Washington, D. C.
EMMA S. JACOBS.....Washington, D. C.

IN COURSE

BACHELOR OF SCIENCE

Agricultural Education

HORACE BENNETT DERRICK.....Takoma Park, D. C.
DOWELL JENNINGS HOWARD.....Brookeville, Md.
WILLIAM MORSE KISHPAUGH.....Harrisburg, Pa.
HENRY REESE SHOEMAKER.....Ashton, Md.
HOWARD BARR WINANT.....Washington, D. C.

Animal Husbandry

ROY S. DEARSTYNE.....Port Chester, N. Y.
BERNARD DUBEL.....Baltimore, Md.
WILLIAM ANDREW GEMENY.....Bozman, Md.
WALTER FORTUNATUS GILPIN.....Lanham, Md.
WILLIAM DORSEY GRAY.....Prince Frederick, Md.
FREDERICK L. THOMSEN.....Hyattsville, Md.
RODERICK DOWS WATSON.....Welcome, Md.

Horticulture

LOREN BURRITT.....Washington, D. C.
HARRY WAITE FRISTOE.....Baltimore, Md.
CHARLES HENRY FUCHS.....Port Chester, N. Y.
CHALES LOUIS LARSEN.....Long Island, N. Y.

Chemistry

JOHN DONNETT.....Baltimore, Md.
CLARENCE GERVASE DONOVAN.....Washington, D. C.
FERDINAND ANDREW KORFF.....Baltimore, Md.
PRESTON M. NASH.....Washington, D. C.

Civil Engineering

IRVING COGGINS.....Washington, D. C.
 SEYMOUR WILLIAM RUFF.....Roslyn, Md.
 HARRY SMITH.....Arlington, Md.
 CLYDE COOPER TARBUTTON.....Crumpton, Md.
 ALBERT VAUGH WILLIAMS.....Nanticoke, Md.

Electrical Engineering

JOHN ALBERT BROMLEY.....Silver Spring, Md.
 LYMAN DANIEL OBERLIN.....Washington, D. C.
 ALBERT HALL SELLMAN.....Stockton, Md.

Mechanical Engineering

BERNARD FREDERICK SENART.....Washington, D. C.

Biology

GALEN MILLER STURGIS.

General Science

LEMUEL ALDEN HASLUP.....Annapolis Junction, Md.

CERTIFICATES IN TWO-YEAR COURSES ISSUED MAY 30, 1917**Agriculture**

HOMER FRANKLIN BIBLE.....College Park, Md.
 OLIN LEECH BEALL.....Beltsville, Md.
 WILLIAM LEROY FRAZEE.....Old Town, Md.
 JAMES MONROE MCCORMICK.....Bel Air, Md.
 JAMES WILMER STEVENS.....Baltimore, Md.
 OSCAR TRAIL.....Easton, Md.
 JOSEPH STANISLAUS WASNEY.....Washington, D. C.
 EARLINGTON JACOB WAYBRIGHT.....Littlestown, Pa.

Horticulture

JOSEPH FRANCIS BECKER.....Washington, D. C.
 ALFRED JAMES BARRETT.....Rome, Italy.
 ANDREW JACKSON BOYD.....Washington, D. C.
 KING BEARDSLEY HOLLYDAY.....Norfolk, Va.
 JAMES MANO SWARTZ.....Baltimore, Md.

TESTIMONIALS OF MERIT AWARDED MAY 30, 1917

For distinguished achievement in the promotion of the agricultural interests of Maryland:

ALEXANDER M. FULFORD, Harford County, Md.

JAMES R. GALBREATH, Harford County, Md.

MEDALS AND PRIZES AWARDED MAY 30, 1917.

For excellence in the Agricultural Education Course, offered by the College:

H. R. SHOEMAKER, Montgomery County, Md.

For excellence in the Animal Husbandry Course, offered by the College:

R. S. DEARSTYNE, Port Chester, N. Y.

Honorable Mention:

W. F. GILPIN, Prince George's County, Md.

For excellence in the Chemical Course, offered by the College:

C. G. DONOVAN, Washington, D. C.

For excellence in the Civil Engineering Course, offered by the College:

C. C. TARBUTTON, Queen Anne's County, Md.

For excellence in the Electrical Engineering Course, offered by the College:

A. H. SELLMAN, Washington, D. C.

For excellence in the Two-Year Course in Agriculture, offered by the College:

E. J. WAYBRIGHT, Littlestown, Pa.

For excellence in the Two-Year Course in Horticulture, offered by the College:

J. M. SWARTZ, Baltimore, Md.

For excellence in Debate, offered by the Alumni Association:

M. D. ENGLE, Montgomery County, Md.

The Goddard Medal for excellence in Scholarship and Moral Character, offered by Mrs. Annie K. Goddard James:

W. F. GILPIN, Prince George's County, Md.

The William Pinkney Whyte Medal for excellence in Oratory, offered by Isaac Lobe Straus, Esq.

M. D. ENGLE, Montgomery County, Md.

"President's Cup" for excellence in Debate, offered by Dr. H. J. Patterson:
New Mercer Literary Society.

BATTALION ORGANIZATION

The enlistment of students and the appointment of students to Officers Training Camps necessitated the reduction of the Battalion from three to two companies, after January 1, 1918.

BATTALION STAFF

F. M. HAIG.....Major.
W. H. CARROLL.....First Lieutenant and Adjutant.
R. S. KANN.....Second Lieutenant and Quartermaster.
H. S. BERLIN.....Sergeant Major.

COMPANY OFFICERS AND NON-COMMISSIONED OFFICERS

COMPANY "A"

COMPANY "B"

Captains

W. V. CUTLER

M. A. PYLE

First Lieutenants

F. C. BRIMER

J. P. JONES

Second Lieutenants

M. J. B. EZEKIEL

R. W. ARTHUR

J. H. REMSBERG

E. L. WILDE

First Sergeants

G. W. NORRIS

M. C. BROWN

Quartermaster Sergeants

W. F. MORNHINWEG

R. W. AXT

Sergeants

J. L. AITCHESON

G. W. CLENDANIEL

R. R. LEWIS

E. M. SAWYER

W. P. HICKS

K. W. BABCOCK

Corporals

C. E. PAINE

E. W. HAND

J. W. STEVENS

A. N. PRATT

K. C. POSEY

P. E. CLARK

C. F. BLETCH

J. H. STARR

H. McDONALD

W. F. STERLING

F. A. DAWSON

M. T. RIGGS

ROSTER OF MATRICULATES

Session 1917-18

GRADUATE STUDENTS

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-----------------------|--------------------|------------------|
| ANSPON, B. W..... | College Park..... | Prince George's. |
| BALLARD, W. R..... | Hyattsville | Prince George's. |
| FOX, E. F..... | Hagerstown | Washington. |
| JARRELL, T. R..... | College Park..... | Prince George's. |
| LEATHERS, C. E..... | Cambridge | Dorchester. |
| JORDAN, S. F..... | College Park..... | Prince George's. |
| MCCONNELL, H. S..... | College Park..... | Prince George's. |
| NICKELS, C. B..... | Starkville | Mississippi. |
| PFINGSTAG, V. R..... | Hudson | Illinois. |
| YOSHIKAWA, MASAO..... | Japan | Japan. |

SENIOR CLASS

| | | |
|-----------------------|---------------------|-----------------------|
| BACON, C. H..... | Silver Spring..... | Montgomery. |
| BRIMER, F. C..... | Stockton | Worcester. |
| CARROLL, W. H..... | Ashland | Baltimore. |
| CLARK, P. E..... | La Plata..... | Charles. |
| CUTLER, W. V..... | Washington | District of Columbia. |
| DAVISON, B..... | Riverdale | Prince George's. |
| DAY, F. D..... | Boyd's | Montgomery. |
| EPPLEY, G. F..... | Washington | District of Columbia. |
| EYRE, R. S..... | Highland | Howard. |
| EZEKIEL, M. J. B..... | Hyattsville | Prince George's. |
| GRIGG, W. K..... | Port Chester..... | New York. |
| HAIG, F. M..... | Riverdale | Prince George's. |
| HORN, P. V..... | Mt. Airy..... | Carroll. |
| JONES, J. P..... | Davidsonville | Anne Arundel. |
| KANN, R. S..... | Pittsburgh | Pennsylvania. |
| PLYE, M. A..... | Baltimore | Baltimore City. |
| REMSBURG, J. H..... | Middletown | Frederick. |
| WILDE, E. L..... | Washington | District of Columbia. |

JUNIOR CLASS

| | | |
|----------------------|---------------------|------------------|
| AITCHESON, J. L..... | Burtonville | Montgomery. |
| AXT, R. W..... | Baltimore | Baltimore City. |
| BABCOCK, K. W..... | Hagerstown | Washington. |
| BERLIN, H. S..... | Baltimore | Baltimore City. |
| BLETSCH, C. F..... | Mt. Rainier..... | Prince George's. |
| BROWN, M. C..... | Sparrows Point..... | Baltimore. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-----------------------|--------------------|------------------------------|
| BUELL, A. C..... | Washington | <i>District of Columbia.</i> |
| CHEN, C. C..... | Shanghai | <i>China.</i> |
| CHICHESTER, F. S..... | Aquasco | Prince George's. |
| CLARK, G. S..... | Ellicott City..... | Howard. |
| COSTER, H. O..... | Coster | Calvert. |
| CRUM, P. E..... | Harmony Grove..... | Frederick. |
| DOWNIN, T. V..... | Williamsport | Washington. |
| DUVALL, W. H..... | Croome | Prince George's. |
| GLEASON, R. W..... | Washington | <i>District of Columbia.</i> |
| GUTBERLET, I. W..... | Baltimore | <i>Baltimore City.</i> |
| HAND, E. W..... | Berwyn | Prince George's. |
| HICKS, W. P..... | Govans | Baltimore. |
| HIPPLE, B. G..... | Marietta | <i>Pennsylvania.</i> |
| LEWIS, R. R..... | Frederick | Frederick. |
| MCLEAN, D. L..... | Baltimore | <i>Baltimore City.</i> |
| MILLER, E. V..... | Hagerstown | Washington. |
| MORNHINWEG, W. F..... | Port Chester..... | <i>New York.</i> |
| NORRIS, G. W..... | College Park..... | Prince George's. |
| PAINE, C. E..... | Washington | <i>District of Columbia.</i> |
| PERKINS, H. T..... | Springfield | Prince George's. |
| POSEY, K. C..... | La Plata..... | Charles. |
| PRATT, A. N..... | Hackensack | <i>New Jersey.</i> |
| SAWYER, E. M..... | College Park..... | Prince George's. |
| SELLMAN, R. L..... | Beltsville | Prince George's. |
| SEWELL, M. D..... | Hyattsville | Prince George's. |
| SIEGERT, L. L..... | Galloway's | Anne Arundel. |
| SMITH, J. E..... | Galloway's | Anne Arundel. |
| STARR, J. H..... | Westover | Somerset. |
| STEVENS, J. W..... | Baltimore | <i>Baltimore City.</i> |

SOPHOMORE CLASS

| | | |
|----------------------|-------------------|------------------------------|
| ADY, E. B..... | Sharon | Harford. |
| ATKINSON, W. F..... | Washington | <i>District of Columbia.</i> |
| AUSTIN, J. A..... | Blackshear | <i>Georgia.</i> |
| BARTON, J. H..... | Centreville | Queen Anne's. |
| BAURMAN, W. M..... | Washington | <i>District of Columbia.</i> |
| BISSELL, T. L..... | Westover | Somerset. |
| CARROLL, H. M..... | Baltimore | <i>Baltimore City.</i> |
| DAWSON, E. E..... | Trappe | Talbot. |
| DAWSON, F. A..... | Washington | <i>District of Columbia.</i> |
| DIGGS, A. C..... | Baltimore | <i>Baltimore City.</i> |
| DINGMAN, J. E..... | Berwyn | Prince George's. |
| DRAWBAUGH, J. R..... | Washington | <i>District of Columbia.</i> |
| ETIENNE, A. D..... | Berwyn | Prince George's. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-------------------------|--------------------|-----------------------|
| EZEKIEL, W. N..... | Hyattsville | Prince George's. |
| FLETCHER, A. E..... | Erie | Pennsylvania. |
| GRAY, J. A..... | Brownsville | Washington. |
| HAMILL, F. J..... | Baltimore | Baltimore City. |
| HOCKMAN, G. B..... | Hagerstown | Washington. |
| HODGINS, R. J..... | Union City..... | Pennsylvania. |
| HOOKE, ELIZABETH G..... | Baltimore | Baltimore City. |
| JONES, A. S..... | Washington | District of Columbia. |
| KEEFAUVER, J. E..... | Berwyn | Prince George's. |
| KNODE, J. S..... | Martinsburg | West Virginia. |
| KNODE, R. T..... | Martinsburg | West Virginia. |
| LAMBDIN, F. F..... | Annapolis | Anne Arundel. |
| LANGRALL, J. H..... | Baltimore | Baltimore City. |
| LAWSON, E. W..... | Crisfield | Somerset. |
| MACDONALD, A..... | Washington | District of Columbia. |
| MORGAN, J. A..... | Lonaconing | Allegany. |
| MORNHINWEG, E. S..... | Port Chester..... | New York. |
| RIGGS, M. T..... | Rockville | Montgomery. |
| RUPPERT, E. E..... | Washington | District of Columbia. |
| STERLING, W. F..... | Crisfield | Somerset. |
| STURGIS, H. L..... | Hyattsville | Prince George's. |
| SULLIVAN, J. H..... | Newburyport | Massachusetts. |
| TAYLOR, E. G..... | Wishart's | Virginia. |

FRESHMAN CLASS

| | | |
|------------------------|----------------------|-----------------------|
| BLAND, HARRIETT W..... | Sparks | Baltimore. |
| BLUMBERG, M. D..... | New York..... | New York. |
| BRUNDAGE, W. R..... | Port Chester..... | New York. |
| CALDWELL, D. R..... | Washington | District of Columbia. |
| COLE, C. W..... | Towson | Baltimore. |
| DONALDSON, E. C..... | Laurel | Prince George's. |
| EISEMAN, J. H..... | Washington | District of Columbia. |
| FORD, S. W..... | Upper Fairmount..... | Somerset. |
| FRERE, F. J..... | Tompkinsville | Charles. |
| FUCHS, J..... | Port Chester..... | New York. |
| GARDNER, W. T..... | Clear Spring..... | Washington. |
| GRAHAM, J. R..... | Barclay | Queen Anne's. |
| GRIMM, W. H..... | Stanley | Virginia. |
| GROTEN, T. C..... | Pocomoke City..... | Worcester. |
| HAMKE, J. C..... | Rockville | Montgomery. |
| HELLER, R. W..... | Annapolis | Anne Arundel. |
| HIGGINS, E. W..... | Mardela Springs..... | Wicomico. |
| HOLTER, C. K..... | Jefferson | Frederick. |
| HOLTER, E. F..... | Middletown | Frederick. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|------------------------|--------------------|------------------------|
| JESTER, W. C..... | Wilmington | Delaware. |
| KELLAM, D. C..... | Shady Side..... | Virginia. |
| MARQUIS, T. E..... | Washington | District of Columbia. |
| NELSON, G. V..... | Newport News..... | Virginia. |
| NEUMAN, A..... | Washington | District of Columbia. |
| PEDDICORD, H. R..... | Dickerson | Montgomery. |
| PERRY, D. P..... | Clear Spring..... | Washington. |
| POWELL, E. W..... | Princess Anne..... | Somerset. |
| RAKEMANN, H. C..... | Washington | District of Columbia. |
| RAUSCH, R. M..... | Baltimore | Baltimore City. |
| REINMUTH, O..... | Frederick | Frederick. |
| ROBERTS, F..... | Berwyn | Prince George's |
| ROCKWELL, P. H..... | Collington | Prince George's. |
| SALISBURY, A. W..... | Ridgely | Caroline. |
| SCHEUCH, J. D..... | Washington | District of Columbia. |
| SENER, H. H..... | Chewsville | Washington. |
| SILBERMAN, H. A..... | Washington | District of Columbia. |
| SLANKER, F..... | Washington | District of Columbia. |
| SMITH, J. W..... | Arlington | Baltimore. |
| SNYDER, L. W..... | Washington | District of Columbia. |
| SPANGLER, G. W..... | Chanute | Kansas. |
| STARKEY, E. B..... | Sudlersville | Queen Anne's. |
| STEPHENSON, P. R..... | College Park..... | Prince George's |
| STONE, R., JR..... | Annapolis | Anne Arundel. |
| STONESTREET, N. V..... | Rock Point..... | Charles. |
| STUBBS, J. S..... | Charles Town..... | West Virginia. |
| THAWLEY, L. H..... | Laurel | Prince George's. |
| THOMAS, R. B..... | Washington | District of Columbia.. |
| THOMAS, W. P..... | Jefferson | Frederick. |
| TRACHTENBERG, I..... | Brooklyn | New York. |
| TWILLEY, O. S..... | Hurlock | Dorchester. |
| WALKER, W. P..... | Mt. Airy..... | Carroll. |
| WESTCOTT, C. W..... | Atlantic City..... | New Jersey. |
| WHITE, H. N..... | Princess Anne..... | Somerset. |
| WILHELM, C. P..... | Arlington | Baltimore. |

SUB-FRESHMAN CLASS

| | | |
|------------------------|--------------------|------------------|
| BOYER, O. H..... | Perryman | Harford. |
| DARNALL, C. E..... | Hyattsville | Prince George's. |
| DUVALL, W. N..... | Baltimore | Baltimore City. |
| EZEKIEL, BERTHA B..... | Hyattsville | Prince George's. |
| HUGG, J. A..... | Baltimore | Baltimore City. |
| MCCENEY, R. S..... | Silver Spring..... | Prince George's. |
| MORGAN, P. T..... | Arlington | Baltimore. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-------------------|-----------------------|------------------------------|
| ORBAN, F. J..... | Baltimore | <i>Baltimore City.</i> |
| OWINGS, E. P..... | Chesapeake Beach..... | Calvert. |
| SCOTT, J. G..... | Princess Anne..... | Somerset. |
| SILVER, G. B..... | Havre de Grace..... | Harford. |
| SWARTZ, A. N..... | Washington | <i>District of Columbia.</i> |
| WOODS, H. E..... | Washington | <i>District of Columbia.</i> |
| WRIGHT, J. R..... | Baltimore | <i>Baltimore City.</i> |

SECOND-YEAR AGRICULTURAL CLASS

| | | |
|------------------------|--------------------|------------------------------|
| BREADY, G. A..... | Herndon | <i>Virginia.</i> |
| FORREST, R..... | Rockville | Montgomery. |
| SCHULTE, H. H..... | Newark | <i>New Jersey.</i> |
| SCRIBNER, A. M..... | Philadelphia | <i>Pennsylvania.</i> |
| VAUX, CHARLOTTE A..... | Washington | <i>District of Columbia.</i> |
| WEAVER, H..... | Greensboro | Caroline. |
| WILMER, H. R..... | Faulkner | Charles. |

FIRST-YEAR AGRICULTURAL CLASS

| | | |
|-----------------------|---------------------|------------------------------|
| CORKRAN, E. B..... | Rhodesdale | Dorchester. |
| DONOVAN, C. A..... | Washington | <i>District of Columbia.</i> |
| FROELICH, E..... | Crisfield | Somerset. |
| GRIFFIN, N. E..... | Washington | <i>District of Columbia.</i> |
| HOLDER, T. D..... | Vienna | Dorchester. |
| JOH, R..... | Violetville | Baltimore. |
| MENZEL, K. F..... | Washington | <i>District of Columbia.</i> |
| NEVITT, L. H..... | Washington | <i>District of Columbia.</i> |
| QUAINTANCE, H. W..... | Washington | <i>District of Columbia.</i> |
| RICHARDSON, P. S..... | Williamsburg | Dorchester. |
| SAUNDERS, H. R..... | Washington | <i>District of Columbia.</i> |
| SHEPHERD, J. H..... | Branchville | Prince George's. |
| TAWES, W. I..... | Crisfield | Somerset. |
| UMBARGER, H. L..... | Bel Air..... | Harford. |
| WHITE, J. N..... | Upper Marlboro..... | Prince George's. |
| YOUNG, C. H..... | Aquasco | Prince George's. |

UNCLASSIFIED

| | | |
|-----------------------|---------------------|------------------------------|
| ARTHUR, R. W..... | Havre de Grace..... | Harford. |
| CLENDANIEL, G. W..... | Kennedyville | Kent. |
| COPPAGE, H. S..... | Church Hill..... | Queen Anne's. |
| HALL, F. B..... | Charles Town..... | <i>West Virginia.</i> |
| HARDISTY, W. R..... | Seabrook | Prince George's. |
| HOLMES, GRACE..... | Takoma Park..... | <i>District of Columbia.</i> |
| MCDONALD, H. M..... | Barton | Allegany. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-----------------------|--------------------|------------------------------|
| MERRILL, G. M..... | Crisfield | Somerset. |
| PERRIE, A. L..... | College Park..... | Prince George's. |
| RAKEMANN, F. B..... | Washington | <i>District of Columbia.</i> |
| RAYBAUD, E. R..... | Washington | <i>District of Columbia.</i> |
| RICH, M. N..... | Washington | <i>District of Columbia.</i> |
| SMITH, P. H..... | Philadelphia | <i>Pennsylvania.</i> |
| UMHAU, CHRISTINE..... | Washington | <i>District of Columbia.</i> |
| WALLS, H. R..... | Church Hill..... | Queen Anne's. |
| WISEMAN, K. B..... | Pittsburgh | <i>Pennsylvania.</i> |

STUDENTS IN THE SUMMER SCHOOL

| | | |
|-----------------------------|------------------------|------------------------------|
| ADAMS, A. C..... | Bristol | <i>Tennessee.</i> |
| ALBRITAIN, LOUISE..... | La Plata..... | Charles. |
| ALLEE, HELEN..... | Cumberland | Allegany. |
| BAITY, EARL..... | Highland | Harford. |
| BALDWIN, ELIZABETH..... | Washington | <i>District of Columbia.</i> |
| BARNES, MARY..... | La Plata..... | Charles. |
| BENSON, HILDA..... | Brookeville | Montgomery. |
| BERRY, ELOISE..... | Berry | Charles. |
| BIGGS, IRMA..... | Frederick | Frederick. |
| BRENT, EUGENIA..... | Waldorf | Charles. |
| BRINKMAN, BLANCHE..... | Belle Grove..... | Allegany. |
| BROOKHANK, U. N..... | Riceville | Charles. |
| BUXTON, ELAINE..... | Govans | Baltimore. |
| CANTER, GRACE..... | Hughesville | Charles. |
| CHESELDINE, CARRIE..... | Palmer's | St Mary's. |
| CLARKE, EDITH..... | California | St Mary's. |
| CLARKE, ELIZABETH..... | Annapolis Junction.... | Anne Arundel. |
| COPLEY, I. C. (Mrs.)..... | Washington | <i>District of Columbia.</i> |
| COVER, BLANCHE..... | New Windsor..... | Carroll. |
| CRAMER, BLANCHE (Mrs.)..... | Silver Spring..... | Montgomery. |
| CREEK, CLARA..... | Hancock | Washington. |
| CROFT, LORENA..... | Port Tobacco..... | Charles. |
| CROMWELL, FLOYD..... | Walkersville | Frederick. |
| CZARRA, SIGMUNDA..... | Hyattsville | Prince George's. |
| DARNER, DAISY..... | Jefferson | Frederick. |
| DAVIS, DOROTHY..... | Chaptico | St. Mary's. |
| DENT, NELLIE..... | Oakley | St. Mary's. |
| DEVILBISS, EDNA..... | Mt. Airy..... | Frederick. |
| DIETZ, GEORGE..... | Baltimore | <i>Baltimore City.</i> |
| DUBEL, OMER..... | Myersville | Frederick. |
| EWELL, GOLDIE..... | Compton | St. Mary's. |
| EZEKIEL, BERTHA..... | Hyattsville | Prince George's. |
| FELLOWS, MEREDITH..... | Takoma Park..... | <i>District of Columbia.</i> |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-----------------------------|----------------------|------------------------------|
| FITZGERALD, MARGUERITE..... | Washington | <i>District of Columbia.</i> |
| FOGLE, ETHEL..... | Walkersville | Frederick. |
| FOGLE, HAZEL..... | Walkersville | Frederick. |
| FOX, ESTON..... | Hagerstown | Washington. |
| FREEMAN, EDNA..... | Berwyn | Prince George's. |
| FRERE, MARIE..... | Tompkinsville | Charles. |
| GALLAHAN, JESSIE..... | Brandywine | Prince George's. |
| GARDINER, CLARA..... | Indian Head..... | Charles. |
| GARDINER, MARY..... | Indian Head..... | Charles. |
| GARNER, MARY..... | Baden | Prince George's. |
| GIBBONS, ANNETTE..... | Hughesville | Charles. |
| GILBERT, MARY..... | Walkersville | Frederick. |
| GILLIS, VIOLA..... | Rockville | Montgomery. |
| GITTINGER, BLANCHE..... | Frederick | Frederick. |
| GOTTLIEB, FLORENCE..... | Annapolis | Anne Arundel. |
| GOTTLIEB, KATHRYN..... | Annapolis | Anne Arundel. |
| GRIFFITH, ALLEN..... | Berwyn | Prince George's. |
| GRIFFITH, MARY..... | Forestville | Prince George's. |
| GROVE, GRACE..... | Frederick | Frederick. |
| GULLETTE, LYDIA..... | Vienna | Dorchester. |
| GULLETTE, MARJORIE..... | Vienna | Dorchester. |
| GUYTHER, CLAUDIA..... | Piney Point..... | St. Mary's. |
| HACKETT, LAVADA..... | Vienna | Dorchester. |
| HALL, CLAUDIA..... | Germantown | Montgomery. |
| HARING, GLADYS..... | Cambridge | Dorchester. |
| HARRISON, ADALINA..... | Charlotte Hall..... | St. Mary's. |
| HARRISON, DORA..... | Charlotte Hall..... | St. Mary's. |
| HAWKINS, MARY..... | Millersville | Anne Arundel. |
| HAYDEN, PAULINE..... | Hollywood | St. Mary's. |
| HEARNE, MARY..... | Cambridge | Dorchester. |
| HOLLAND, LOIS..... | Clarksburg | Montgomery. |
| HOLMES, GRACE..... | Washington | <i>District of Columbia.</i> |
| HOLMES, NETTIE..... | Washington | <i>District of Columbia.</i> |
| HOOD, ELIZABETH..... | Mt. Airy..... | Carroll. |
| HOOK, ELIZABETH..... | College Park..... | Prince George's. |
| HOWARD, MARIAN..... | Brookeville | Montgomery. |
| HUNT, LULA..... | South River..... | Anne Arundel. |
| JACKSON, FRANKLIN..... | Washington | <i>District of Columbia.</i> |
| JARBOE, MAUDE..... | Mechanicsville | St. Mary's. |
| JONES, AGNES..... | Hughesville | Charles. |
| JONES, ANNA (Mrs.)..... | Thurmont | Frederick. |
| JOYCE, ADELE..... | Glen Burnie..... | Anne Arundel. |
| KEEFER, A. C..... | College Park..... | Prince George's. |
| KELLY, LILLIAN..... | Thurmont | Frederick. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|---------------------------|---------------------|------------------------------|
| KING, MARY..... | Tippett | Prince George's. |
| KLOSS, AUGUSTA..... | Hyattsville | Prince George's. |
| LAMSON, ELIZABETH..... | Washington | <i>District of Columbia.</i> |
| LAWRENCE, EULALIA..... | Abell | St. Mary's. |
| LEATHERS, C. E..... | College Park..... | Prince George's. |
| LERRIER, ELIZABETH..... | Washington | <i>District of Columbia.</i> |
| LINTHICUM, NANNIE..... | Annapolis | Anne Arundel. |
| LITTLE, FLORENCE..... | Hyattsville | Prince George's. |
| MARTIN, PAULINE..... | North Keys..... | Prince George's. |
| MATTHAEI, DORATHEA..... | Cumberland | Allegany. |
| MATTINGLY, ELIZABETH..... | Leonardtwn | St. Mary's. |
| MAYHEW, RUTH..... | Mitchellville | Prince George's. |
| MCINTYRE, MARY..... | Branchville | Prince George's. |
| MEEKINS, ROXA..... | Fishing Creek..... | Dorchester. |
| MILBURN, ROSA..... | Maddox | St. Mary's. |
| MILLER, NETTIE..... | Mt. Airy..... | Frederick. |
| MILLS, MAUDE..... | Golden Hill..... | Dorchester. |
| MILLS, MILDRED..... | Golden Hill..... | Dorchester. |
| MONTGOMERY, HATTIE..... | Brookeville | Montgomery. |
| MORGAN, CARRIE..... | Millersville | Anne Arundel. |
| MORRIS, ADELAIDE..... | Faulkner | Charles. |
| MORRIS, LILLIAN..... | Faulkner | Charles. |
| NELSON, J. M. (Mrs.)..... | Madison | <i>Wisconsin.</i> |
| NICOLSON, ELLEN..... | Washington | <i>District of Columbia.</i> |
| OWENS, MARY..... | Pindell | Anne Arundel. |
| PATTERSON, BLANCHE..... | College Park..... | Prince George's. |
| FLOWDEN, NELL..... | Bushwood | St. Mary's. |
| PORTER, R. G..... | Hyattsville | Prince George's. |
| POWELL, DORA..... | Denton | Caroline. |
| PRELLER, MARY..... | Annapolis | Anne Arundel. |
| PUMPHREY, ESTHER..... | Germantown | Montgomery. |
| RAUSCH, ROBERT..... | Baltimore | <i>Baltimore City.</i> |
| REED, ELEANORA..... | Germantown | Montgomery. |
| RICE, ESTHER..... | Waterbury | Anne Arundel. |
| ROBINSON, M. E..... | Brightwood | <i>District of Columbia.</i> |
| RODERICK, MARGARET..... | Jefferson | Frederick. |
| ROGERS, ANNABELL..... | Hyattsville | Prince George's. |
| ROGERS, HARRIS..... | Hyattsville | Prince George's. |
| SHILDT, CHARLES..... | Taneytown | Carroll. |
| SHIPLEY, ISABEL..... | Annapolis | Anne Arundel. |
| SIBLEY, IRENE..... | Germantown | Montgomery. |
| SLAGLE, MARY..... | Jefferson | Frederick. |
| SLOAN, MARGUERITE..... | Hyattsville | Prince George's. |
| SMITH, NAOMI..... | Waldorf | Charles. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
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| SMYTH, CAROLINE..... | Chestertown | Kent. |
| SOLLY, LAWRENCE..... | Washington | <i>District of Columbia.</i> |
| STEWART, MARY..... | Baltimore | <i>Baltimore City.</i> |
| THOMPSON, MABEL..... | Brandywine | Prince George's. |
| TOWNSEND, GRACE..... | Brookeville | Montgomery. |
| TUBMAN, MARIE..... | Golden Hill..... | Dorchester. |
| UMHAU, EMILY..... | Washington | <i>District of Columbia.</i> |
| VEITCH, CAROLINE..... | College Park..... | Prince George's. |
| VEITCH, ISABEL..... | College Park..... | Prince George's. |
| WARTHEN, LOUISE..... | College Park..... | Prince George's. |
| WATSON, CLARA..... | Clinton | Prince George's. |
| WATSON, RUTH..... | Welcome | Charles. |
| WESTCAMP, MABEL..... | Clinton | Prince George's. |
| WILLS, LOUISE..... | Bel Alton..... | Charles. |
| WILSON, ELLEN..... | Westwood | Prince George's. |
| WILSON, MAHALA..... | Waterbury | Anne Arundel. |
| WISE, HILDA..... | Wayside | Charles. |
| WOODFIELD, MAGGIE..... | Galloway's | Anne Arundel. |
| WOODWARD, MILDRED..... | Washington | <i>District of Columbia.</i> |
| WOOSTER, HELEN..... | College Park..... | Prince George's. |
| WRIGHT, LILLIAN (Mrs.)..... | Cambridge | Dorchester. |

STUDENTS IN SHORT WINTER COURSES

| | | |
|-----------------------------|---------------------|-----------------------|
| AUSTIN, C. J. (Mrs.)..... | Elkton | Cecil. |
| BENSON, F. H. (Mrs.)..... | Berwyn | Prince George's. |
| BICKFORD, LULA (Mrs.)..... | Berwyn | Prince George's. |
| BROWN, A. E. (Mrs.)..... | Bedford | <i>Massachusetts.</i> |
| BURSCHE, T. R. (Mrs.)..... | Berwyn | Prince George's. |
| CLAFLIN, ELOISE (Mrs.)..... | College Park..... | Prince George's. |
| CLOSE, MARGARET (Mrs.)..... | College Park..... | Prince George's. |
| CONNER, E. R. (Mrs.)..... | College Park..... | Prince George's. |
| DURNBAUGH, W. K. (Mrs.).. | College Park..... | Prince George's. |
| EMERSON, E. E. (Mrs.)..... | Branchville | Prince George's. |
| EUWER, WALTER C..... | Upper Marlboro..... | Prince George's. |
| FINNELL, I. (Mrs.)..... | Berwyn | Prince George's. |
| FORRESTER, T. C..... | Frederick | Frederick. |
| GAHAN, WINIFRED..... | Berwyn | Prince George's. |
| GARDINER, J. U. (Mrs.)..... | Berwyn | Prince George's. |
| GARLOCK, EVA S. (Mrs.)..... | Pomonkey | Prince George's. |
| GILBERT, LEE E..... | Laurel | Prince George's. |
| GOWNLEY, H. S. (Mrs.)..... | Branchville | Prince George's. |
| HALLER, ELLEN (Mrs.)..... | Hagerstown | Washington. |
| HALLER, FREDERICK..... | Hagerstown | Washington. |
| HAMM, B. J. (Mrs.)..... | Berwyn | Prince George's. |

| <i>Name.</i> | <i>Postoffice.</i> | <i>County.</i> |
|-----------------------------|---------------------|------------------------------|
| HARTLEY, EDNA..... | Federalsburg | Caroline. |
| HINES, CHARLES H..... | Frederick | Frederick. |
| KIRNES, HORACE..... | Berlin | Wicomico. |
| LINTHICUM, CHARLES..... | Clarksburg | Howard. |
| MARLOW, W. J. (Mrs.)..... | College Park..... | Prince George's. |
| MCBATH, E. B. (Mrs.)..... | Riverdale | Prince George's. |
| MCNAB, M. C..... | Upper Marlboro..... | Prince George's. |
| MILSTEAD, E. H. (Mrs.)..... | Washington | <i>District of Columbia.</i> |
| OLMSTEAD, L. B. (Mrs.)..... | Anacostia | <i>District of Columbia.</i> |
| ORTMAYER, LOUIS (Mrs.).... | College Park..... | Prince George's. |
| PALMORE, NORA G. (Mrs.)... | College Park..... | Prince George's. |
| PAUL, HARRY (Mrs.)..... | Anacostia | <i>District of Columbia.</i> |
| POWER, ELMORE (Mrs.)..... | College Park..... | Prince George's. |
| PURVIS, C. TAYLOR..... | Hudgins | <i>Virginia.</i> |
| RANCHENSTEIN, E. F. (Mrs.) | Washington | <i>District of Columbia.</i> |
| REILY, J. ROSS (Mrs.)..... | College Park..... | Prince George's. |
| ROBY, H. (Mrs.)..... | Berwyn | Prince George's. |
| SHEARER, J. J..... | Washington | <i>District of Columbia.</i> |
| SHEPHERD, J. H..... | Branchville | Prince George's. |
| SIMS, R. (Mrs.)..... | Branchville | Prince George's. |
| STEIN, C. H. (Mrs.)..... | Berwyn | Prince George's. |
| SWARTZELL, F. F. (Mrs.).... | Washington | <i>District of Columbia.</i> |
| TALIAFERRO, EMILY (Mrs.).. | College Park..... | Prince George's. |
| WARNER, F. E..... | Keyser | <i>West Virginia.</i> |
| WEIGEL, EDNA A. (Mrs.).... | Berwyn | Prince George's. |
| WILSON, SAMUEL C..... | Baltimore | <i>Baltimore City.</i> |
| WOOSTER, (Mrs.)..... | College Park..... | Prince George's. |
| VAUX, ELLEN M. (Mrs.).... | Washington | <i>District of Columbia.</i> |
| VAUGHAN, C. H. (Mrs.).... | Plattsburg | <i>New York.</i> |

SUMMARY OF STUDENTS

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|-------------------------------|-----------|
| Graduates | 10 |
| Seniors | 18 |
| Juniors | 35 |
| Sophomores | 36 |
| Freshman | 54 |
| Sub-Freshman | 14 |
| Second-Year Agricultural..... | 7 |
| First-Year Agricultural..... | 16 |
| Unclassified | 16 |
| Summer School..... | 142 |
| Short Winter Courses..... | 50 |
| | <hr/> 398 |
| Counted twice..... | 6 |
| Total..... | <hr/> 392 |

